بسم الله الرحمن الرحيم

Laminate veneers

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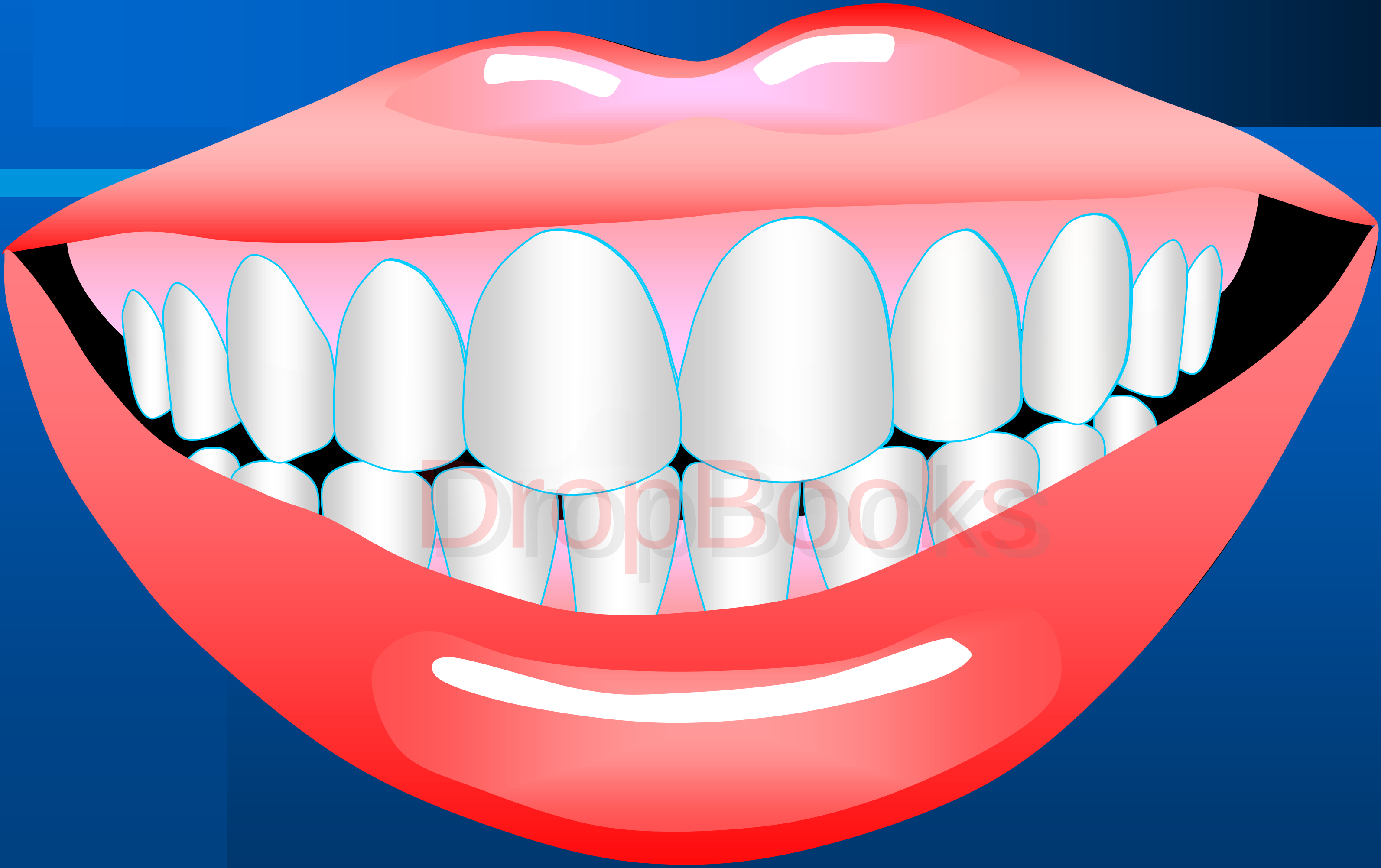
Introduction

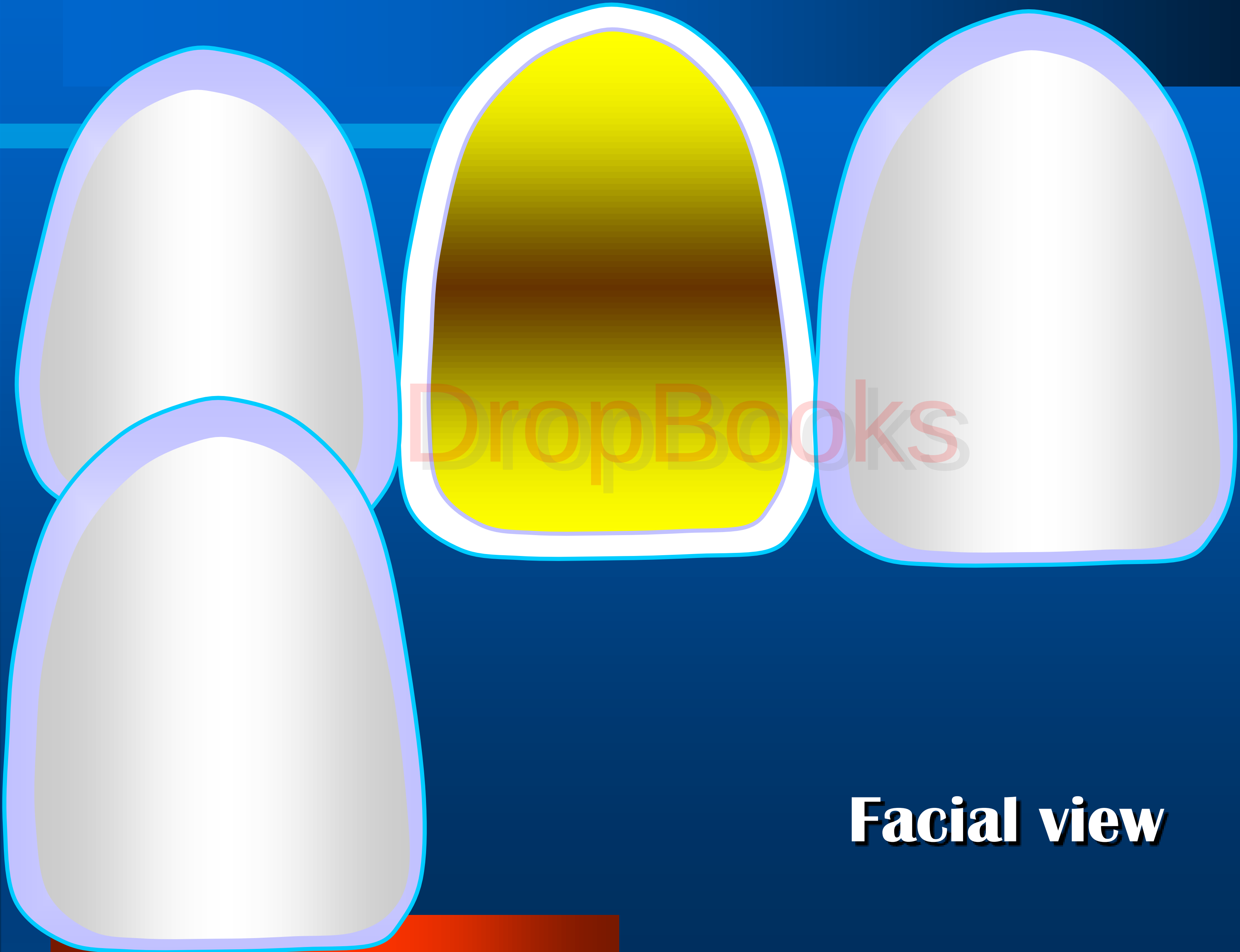
- **A veneer** is a thin covering layer that is bonded to the front (labial/visible) part of the tooth.

Derives its retention entirely from resin cement

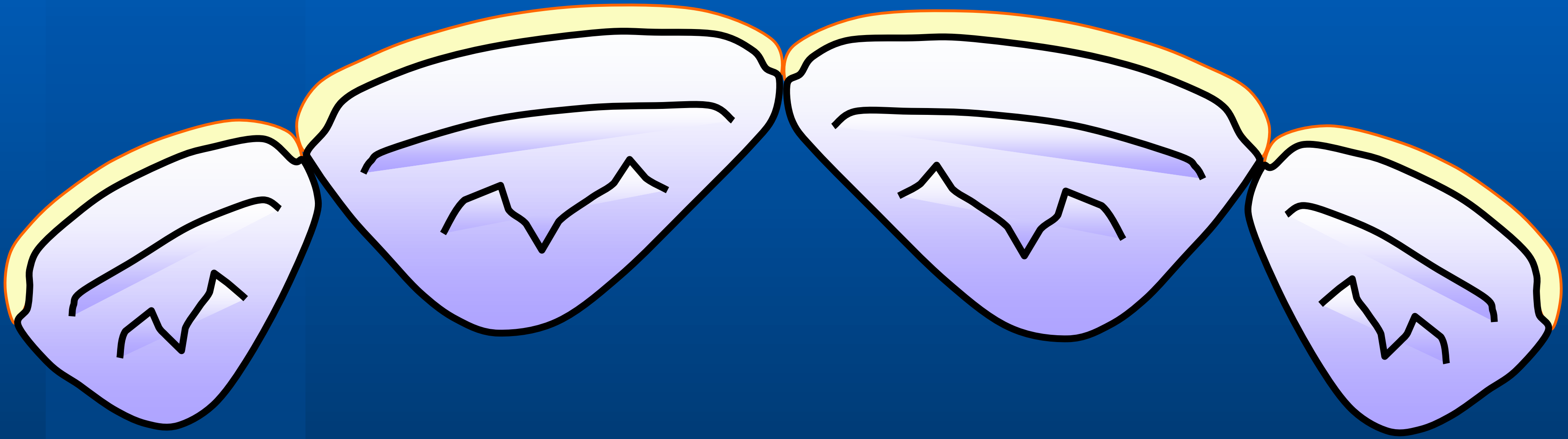
(No added means of retention)



- **Bonding** :application of composite resin to a tooth that had its enamel, dentine or both ,etched or conditioned .
- **Veneering** :the technique of bonding composite resin or porcelain to the entire labial surface of the tooth. ****Laminating: bonding the prefabricated veneer to an etched tooth surface using bonding resin.



Facial view



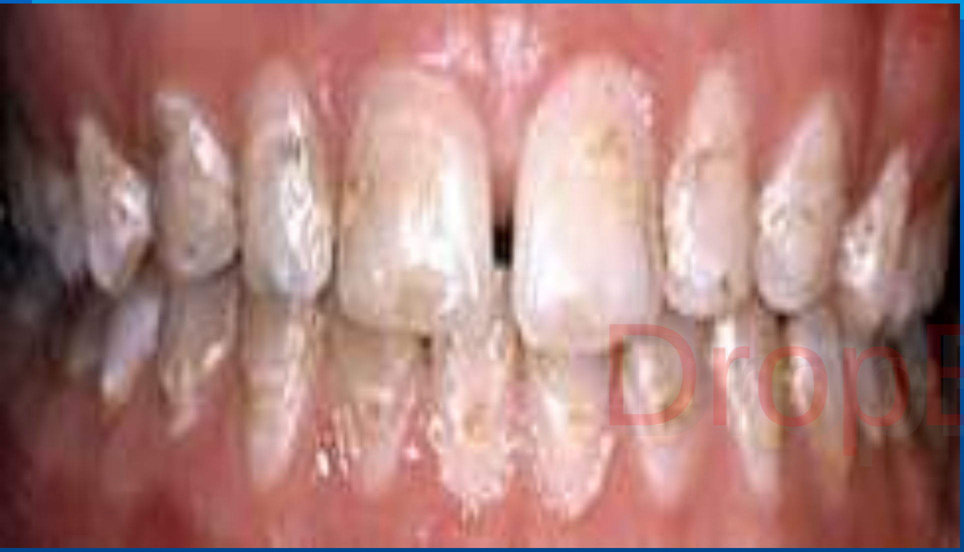
Incisal view

Indications

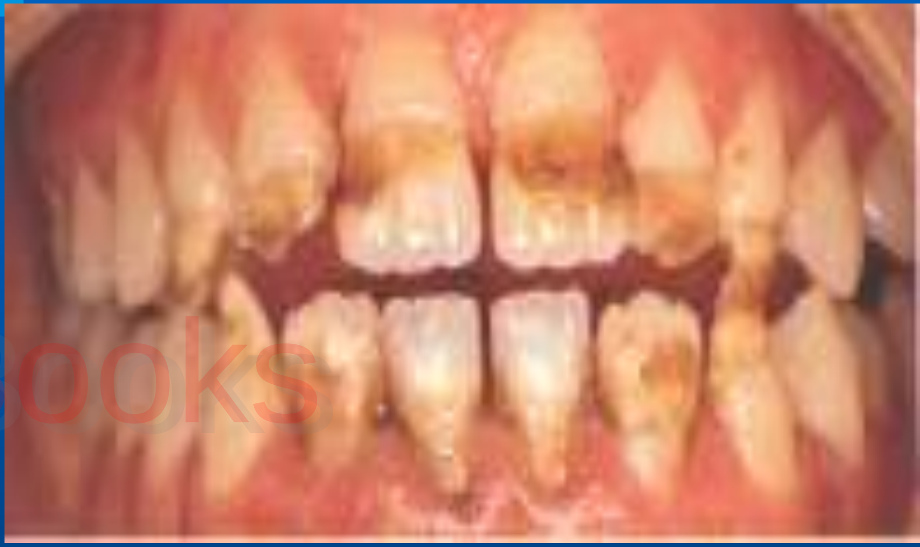
1. Color defects or abnormalities:

- Amelogenesis imperfecta.
- Medications (Tetracycline).
- physiological aging.
- Trauma.

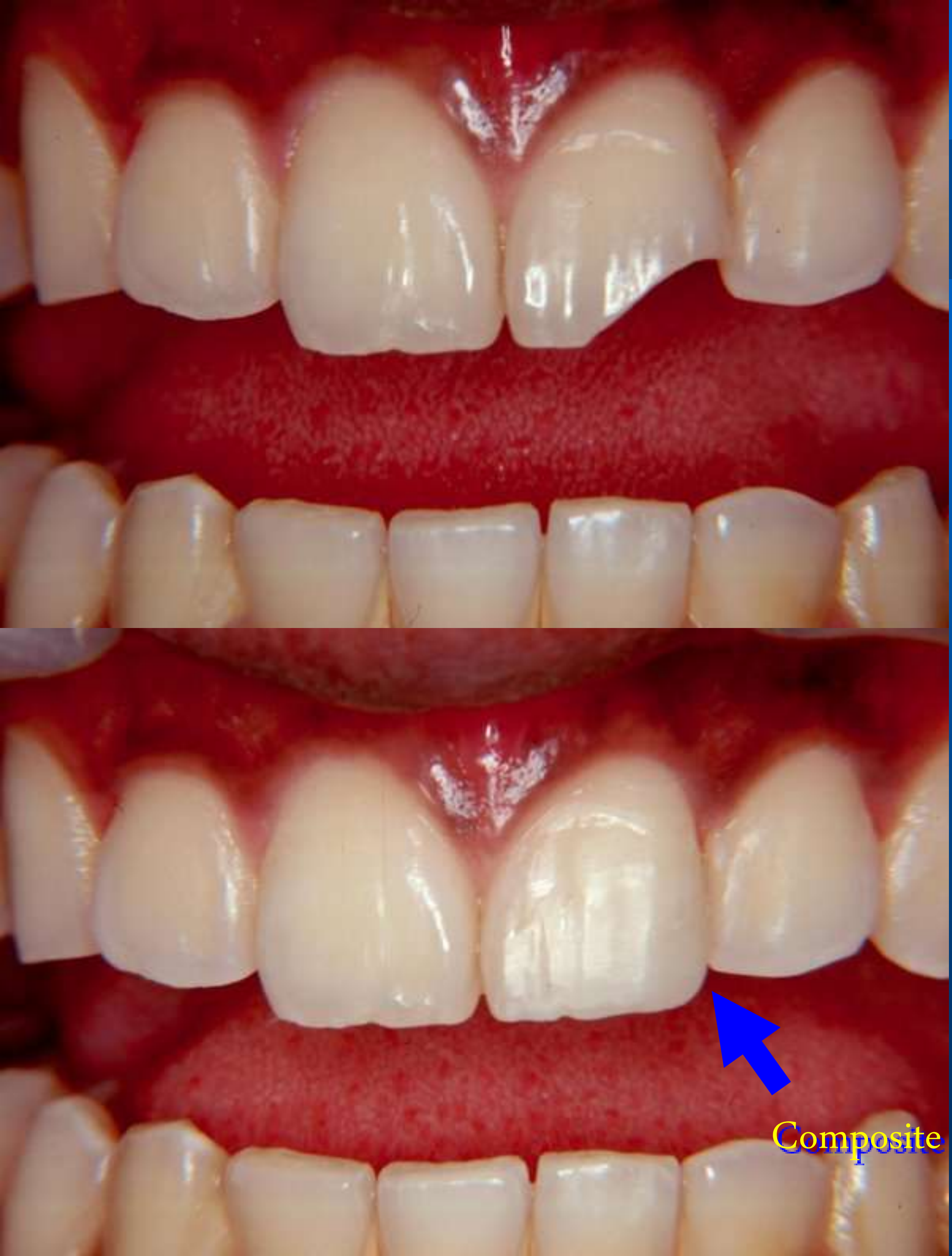
Structural defects



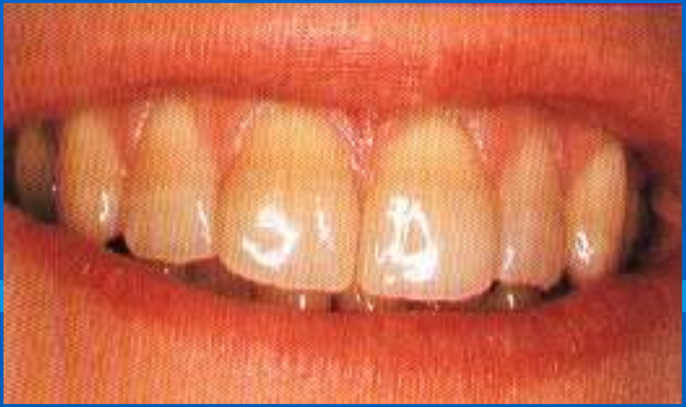
Mottled enamel



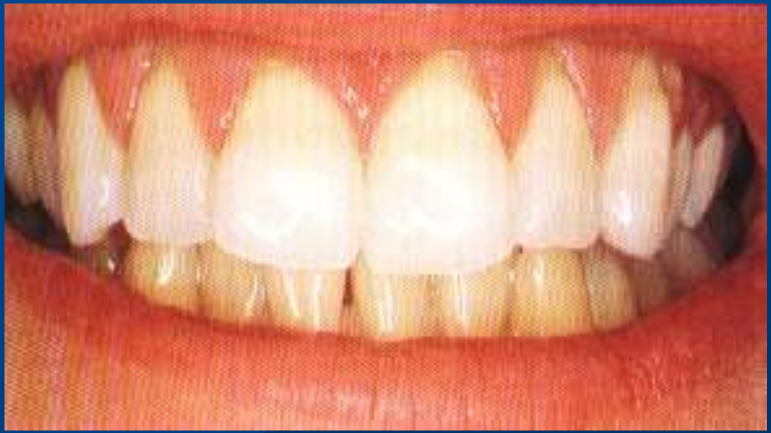
Enamel hypoplasia



- **Fractured incisal angle bonded with composite resin**



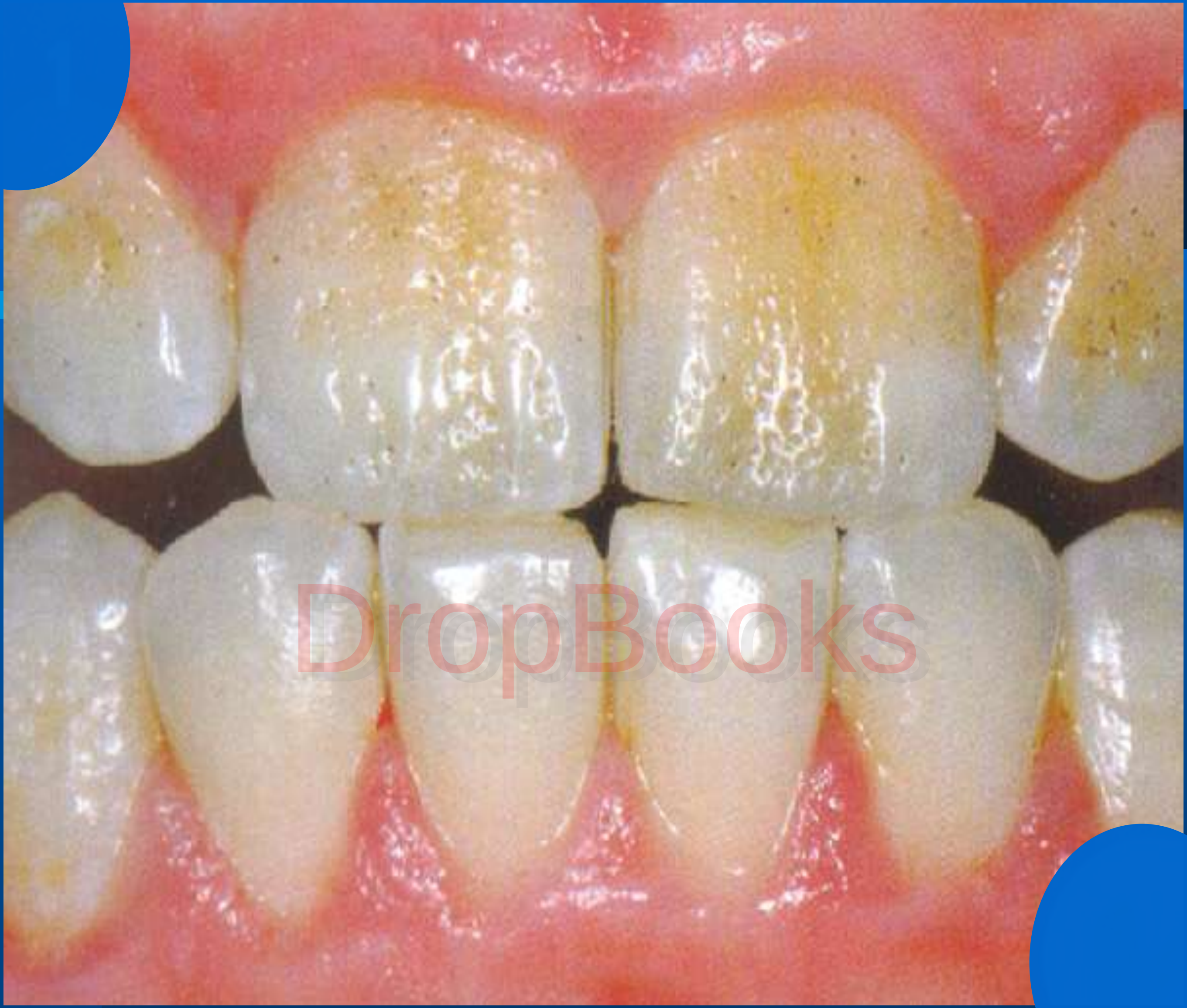
Mild Tetracycline Stains



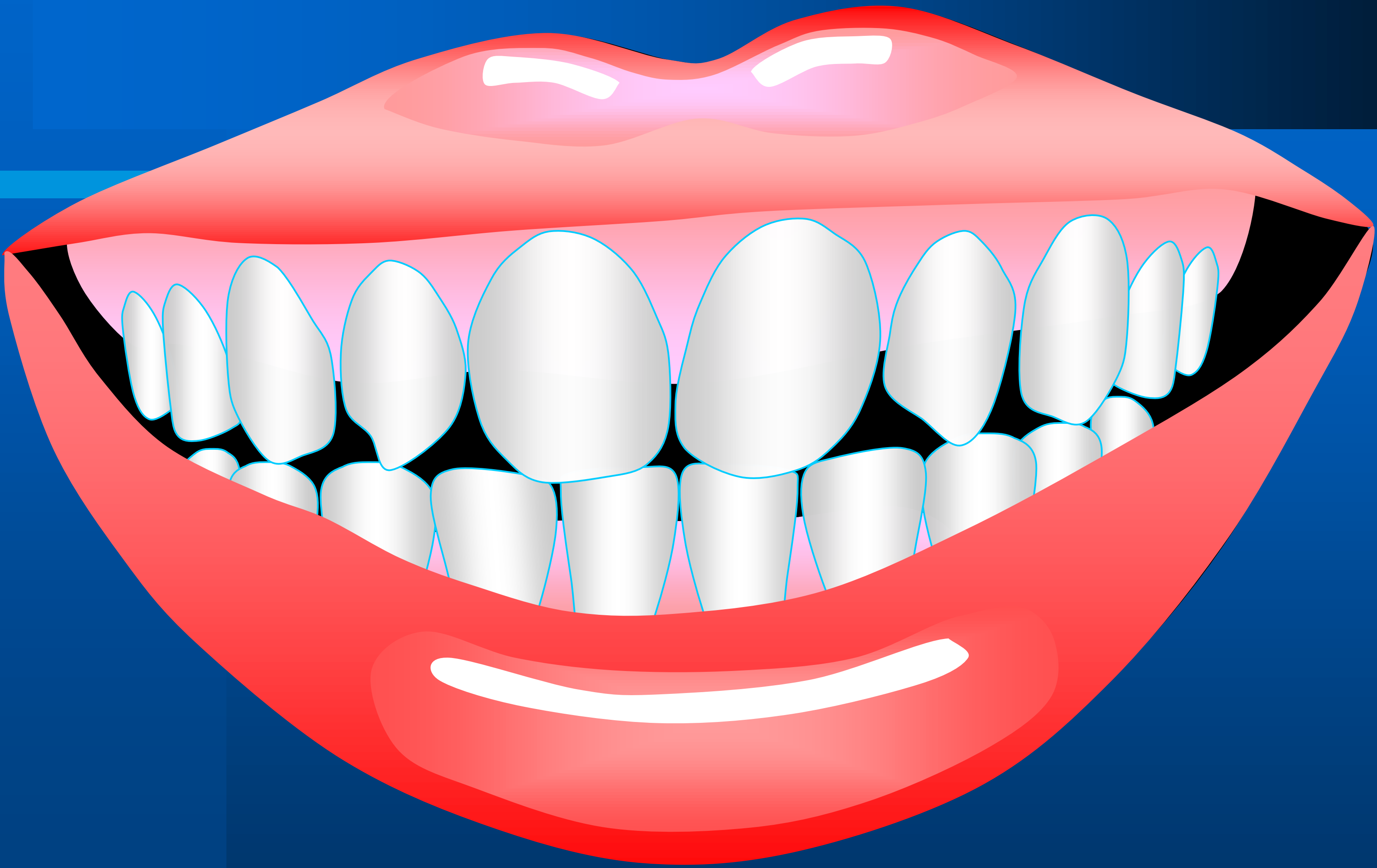
2. Shape abnormalities:

- Microdontia.
- Atypical tooth shape (malformation).

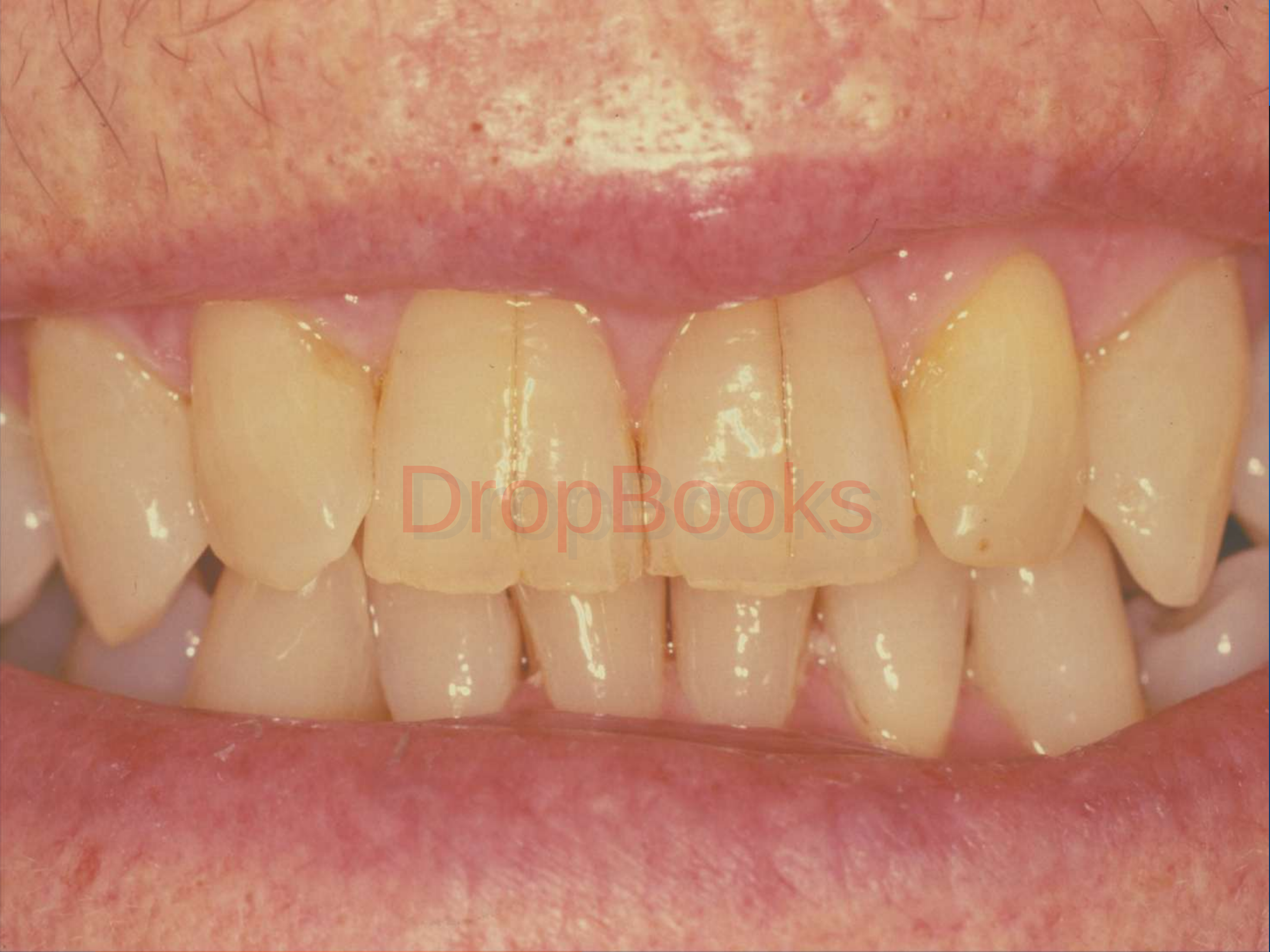
- 3. Structure or texture abnormalities:
  - Dysplasia
  - Erosion
  - Attrition
  - Abrasion
  - Coronal fractures



Enamel dysplasia



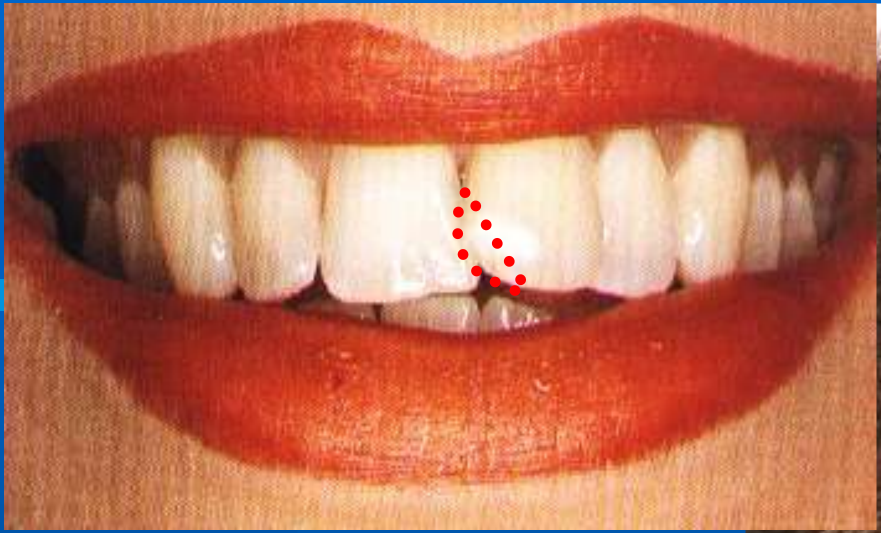
Malformation



4. Position abnormalities:

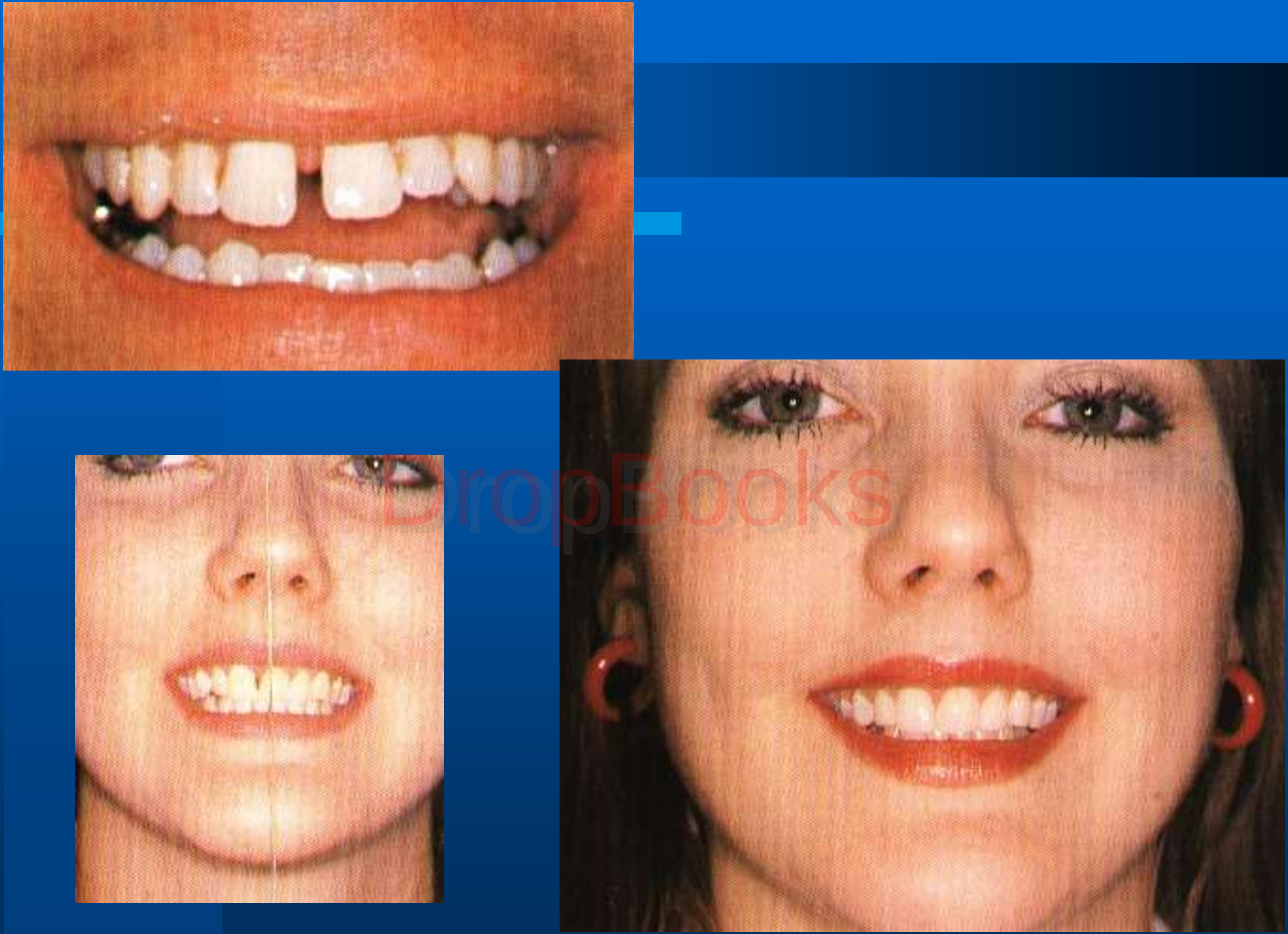
Correction of **minor** malposition:

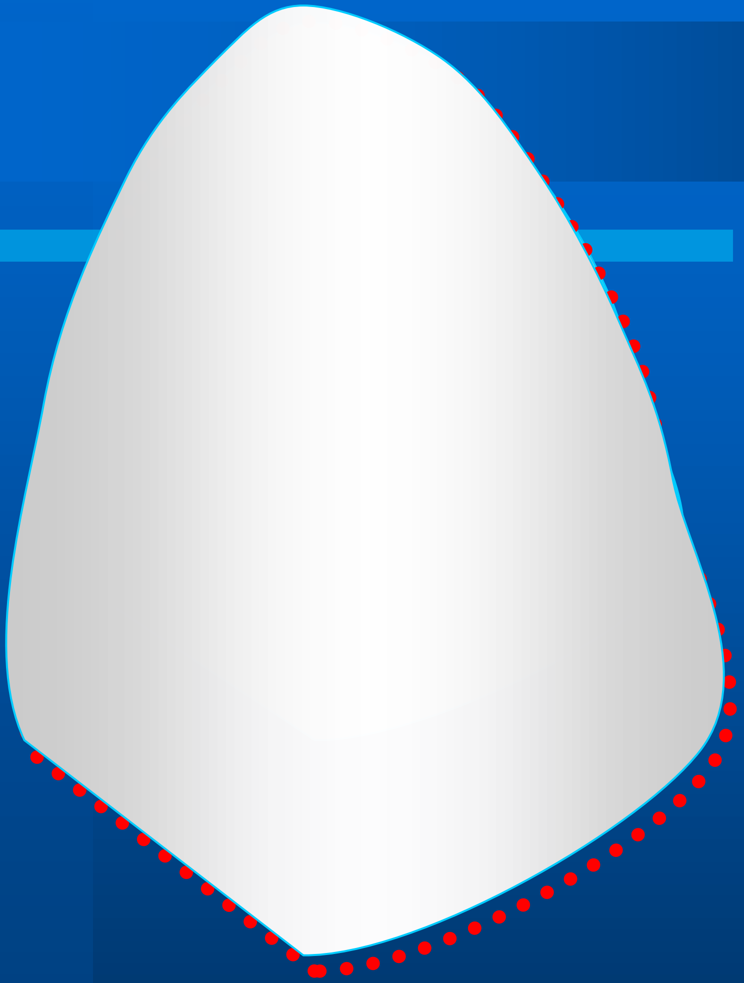
- Rotated teeth
- Change of angulation.



Crowded and overlapping front teeth

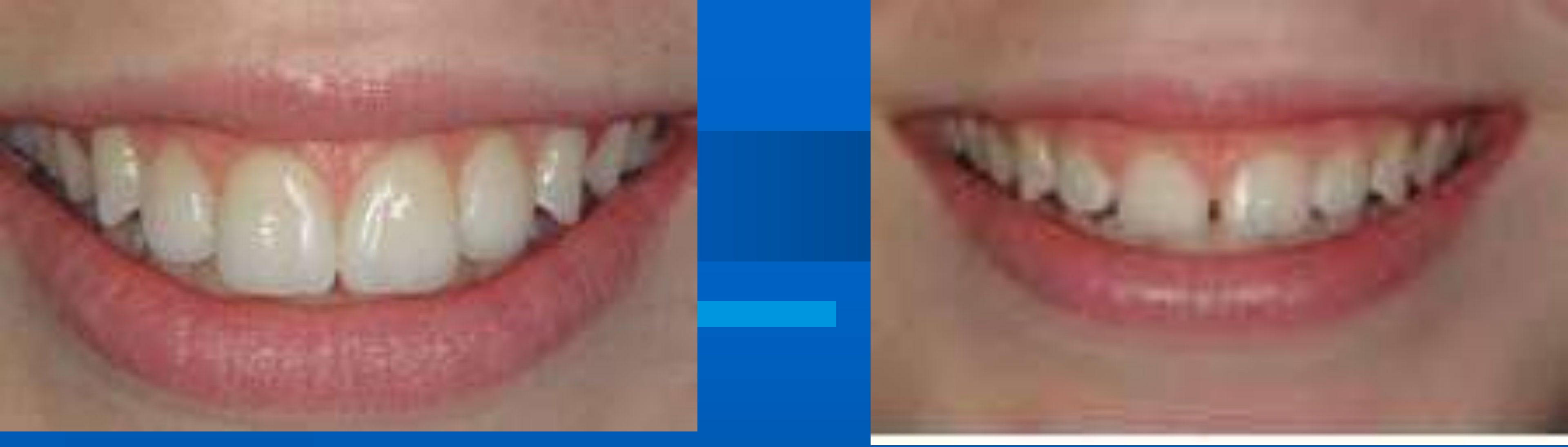
- . Diastema.
- . Lengthening
- . Stained or worn Restoration.
- . Root exposure.
- . Psychological-perceived needs of the patient.



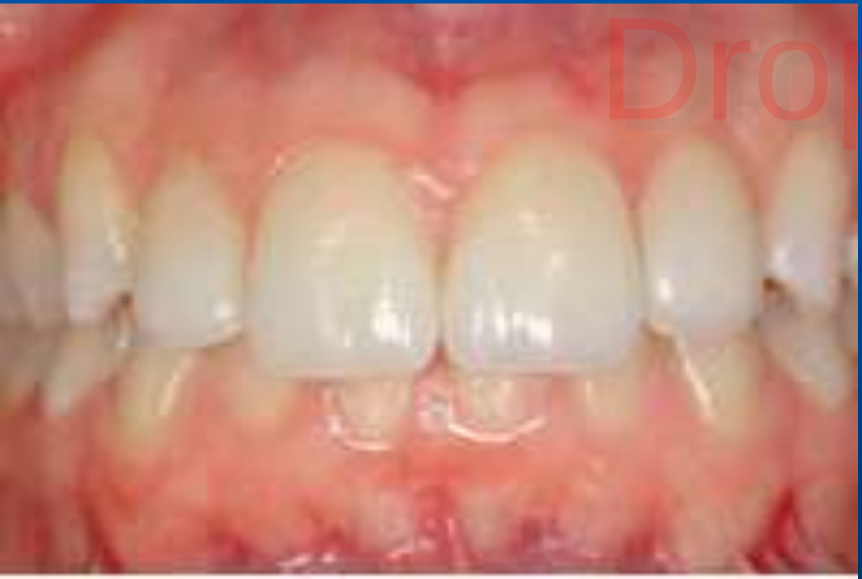


In proportion to the volume of **non-supported ceramics** and **occlusion**

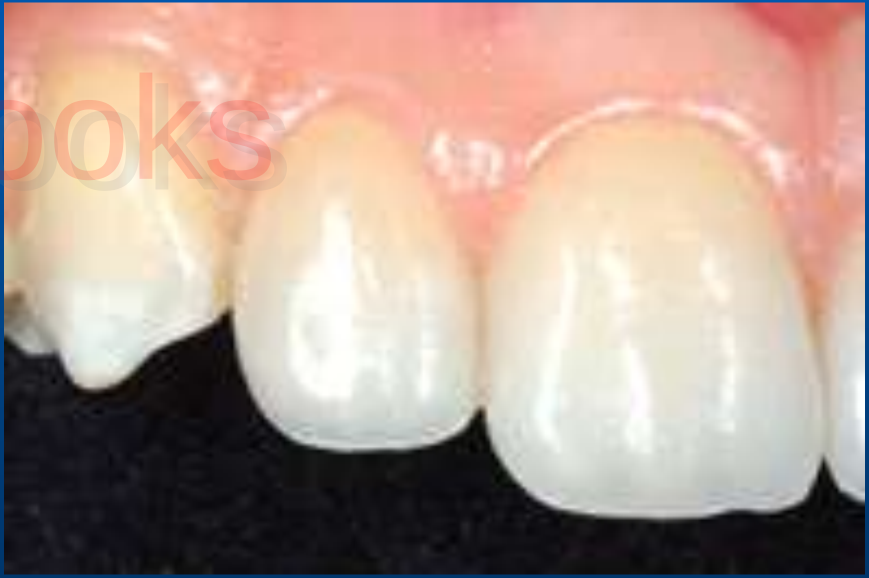
Lengthening



A closer look at the smile shows a dramatic difference when compared to the pre-op smile close-up

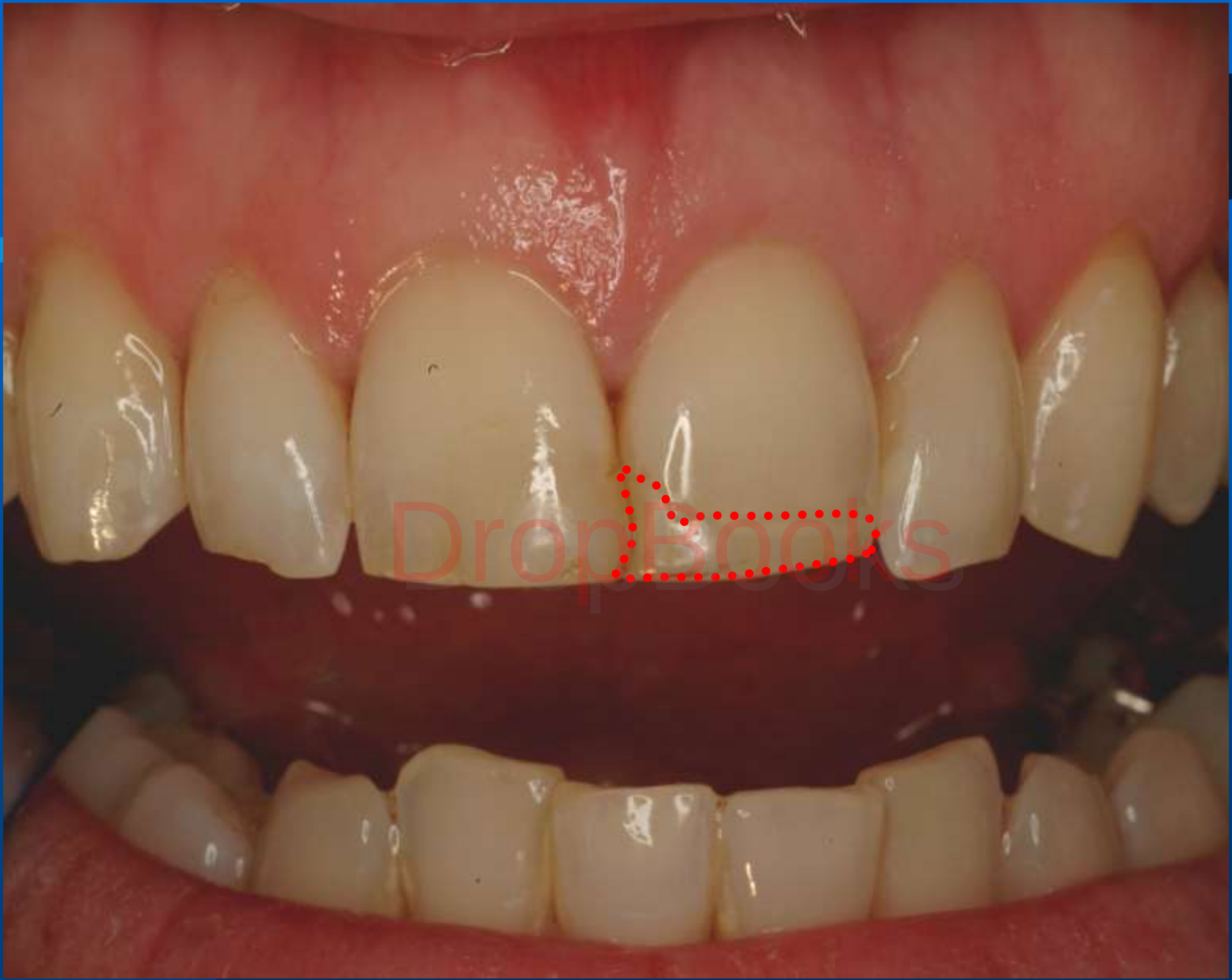


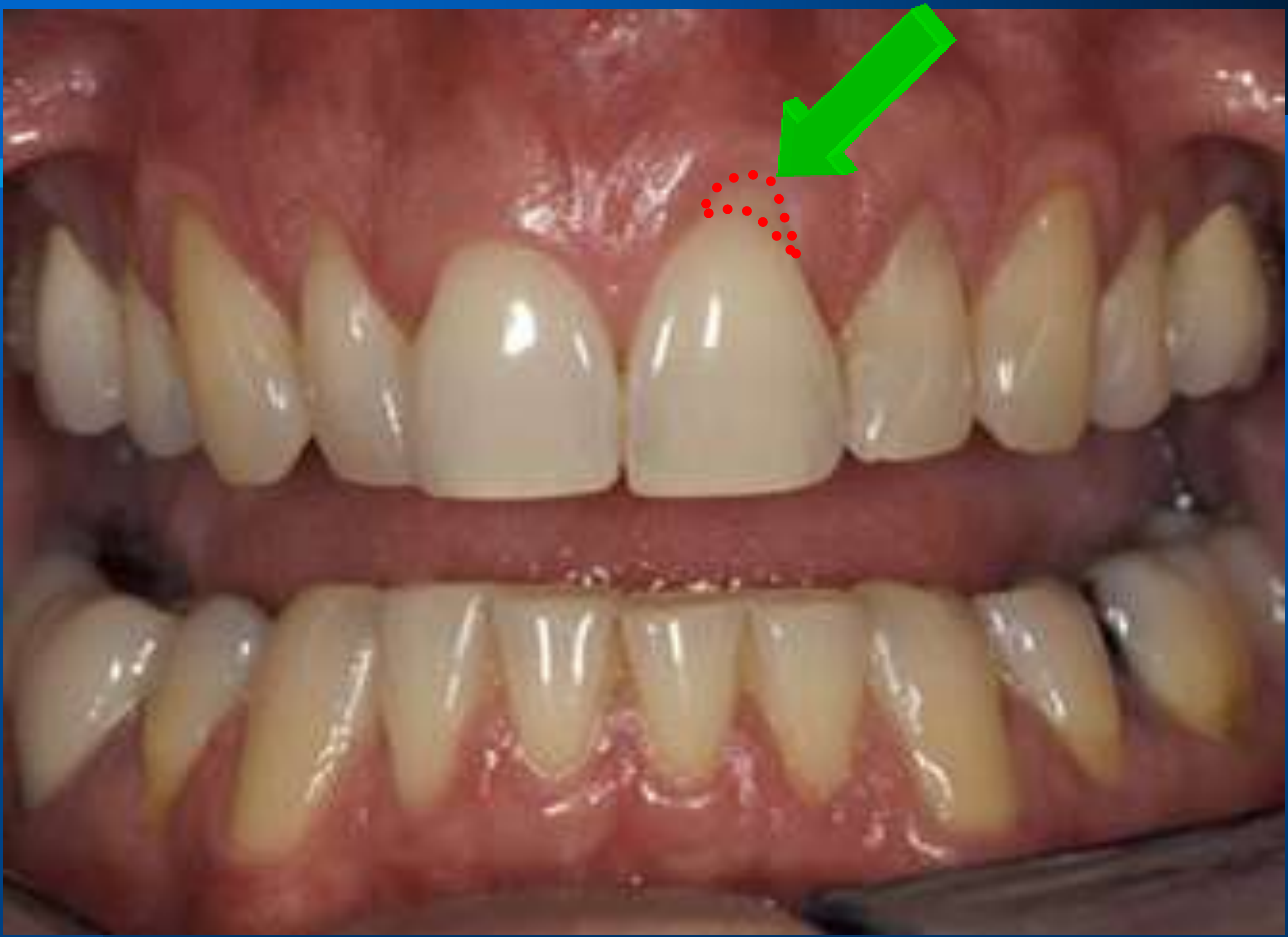
This type of quick, complete healing is typical of laser surgery.

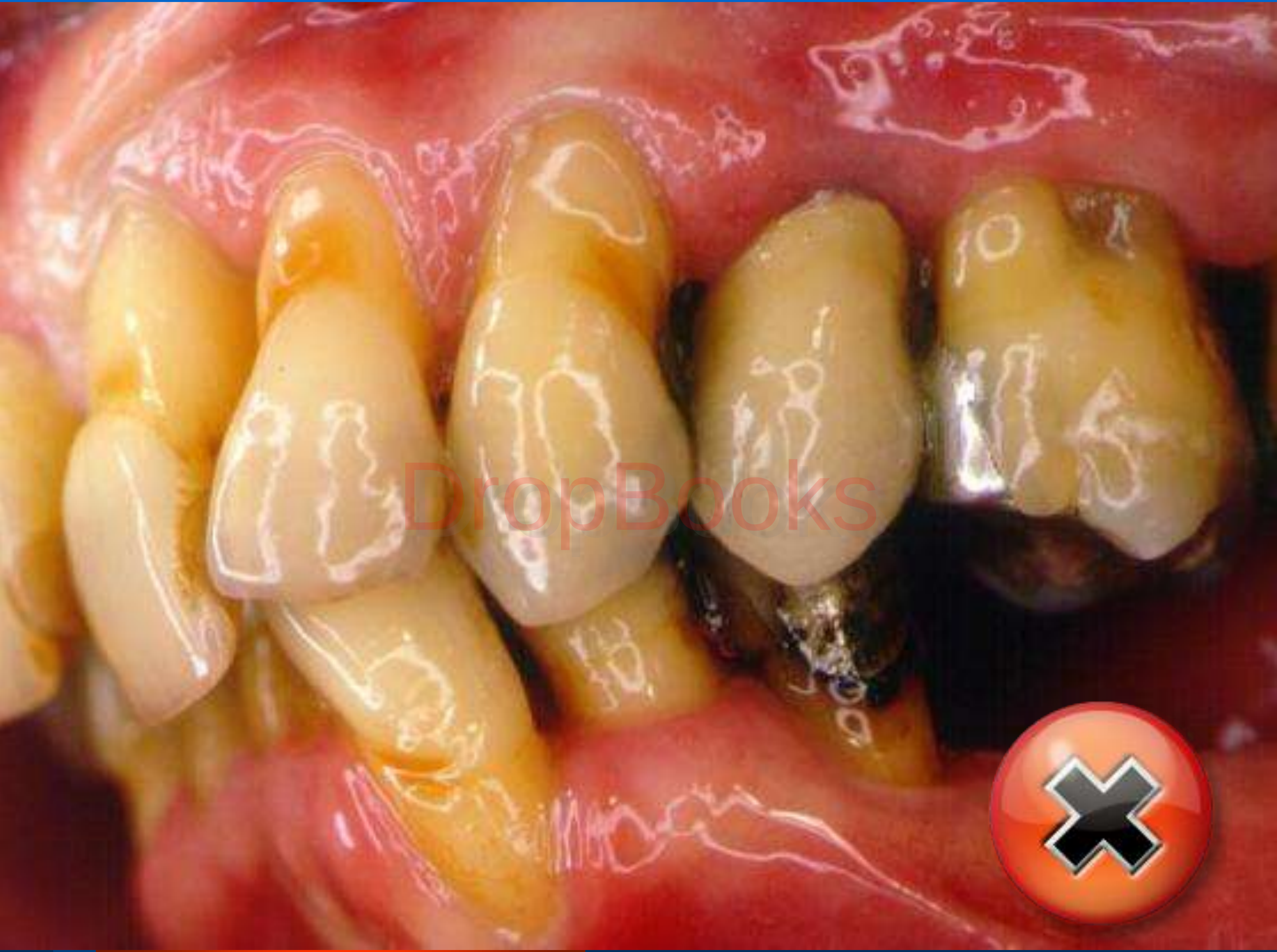


Extreme close-up of right lateral incisor. Note the optimum gingival health

- All caries and old fillings should be restored using composite resin or glass ionomer.
- The final preparation of veneers should include and cover these restoration as possible.



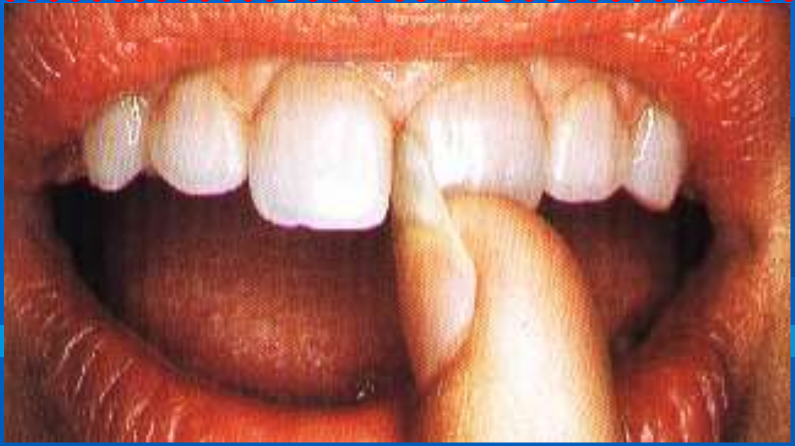




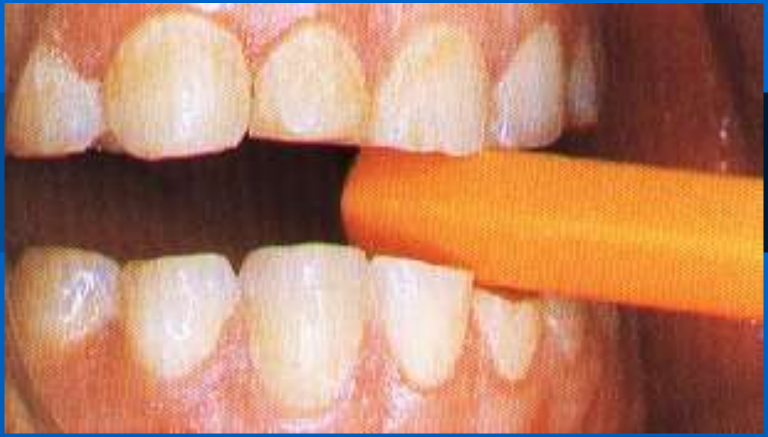
Contraindications

- Extensive loss of supporting enamel
- Unsuitable anatomic presentation (Short or triangular teeth)
- Severe abrasion, erosion , attrition or abfraction *(loss of tooth surface caused by tensile and compressive forces during tooth function)*
- Extensive existing restoration or caries

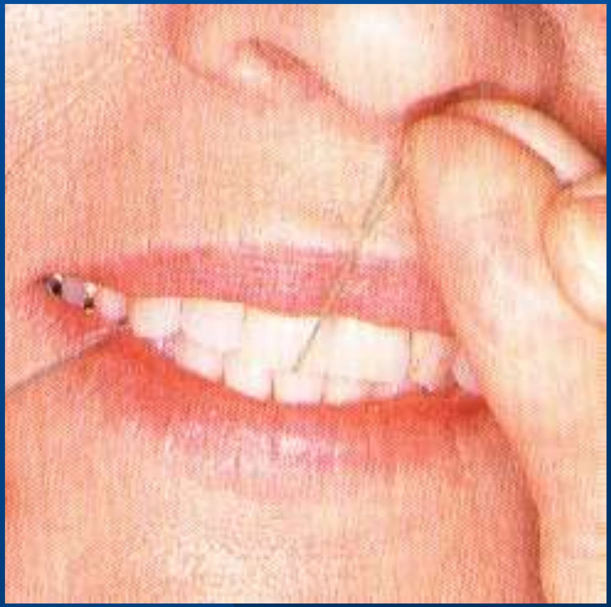
- Parafunction (bruxism)
- Moderate or severe malpositions
- Oral habits (nail biting, pencil biting)
- Pulpless teeth.
- Poor dental care and hygiene

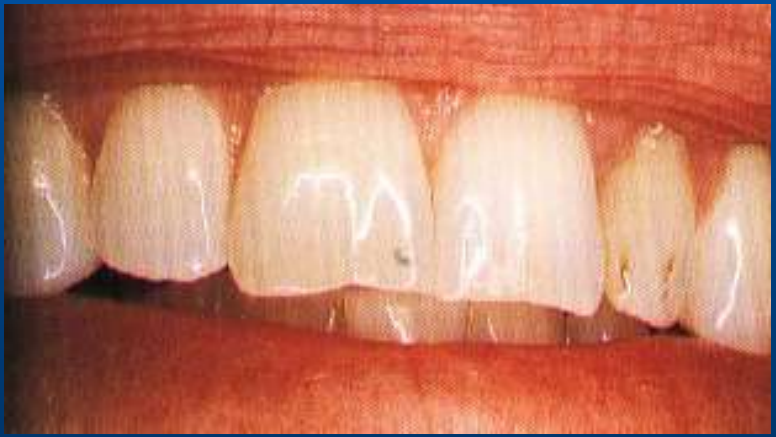


Forcing fingernails between two teeth, causing space.

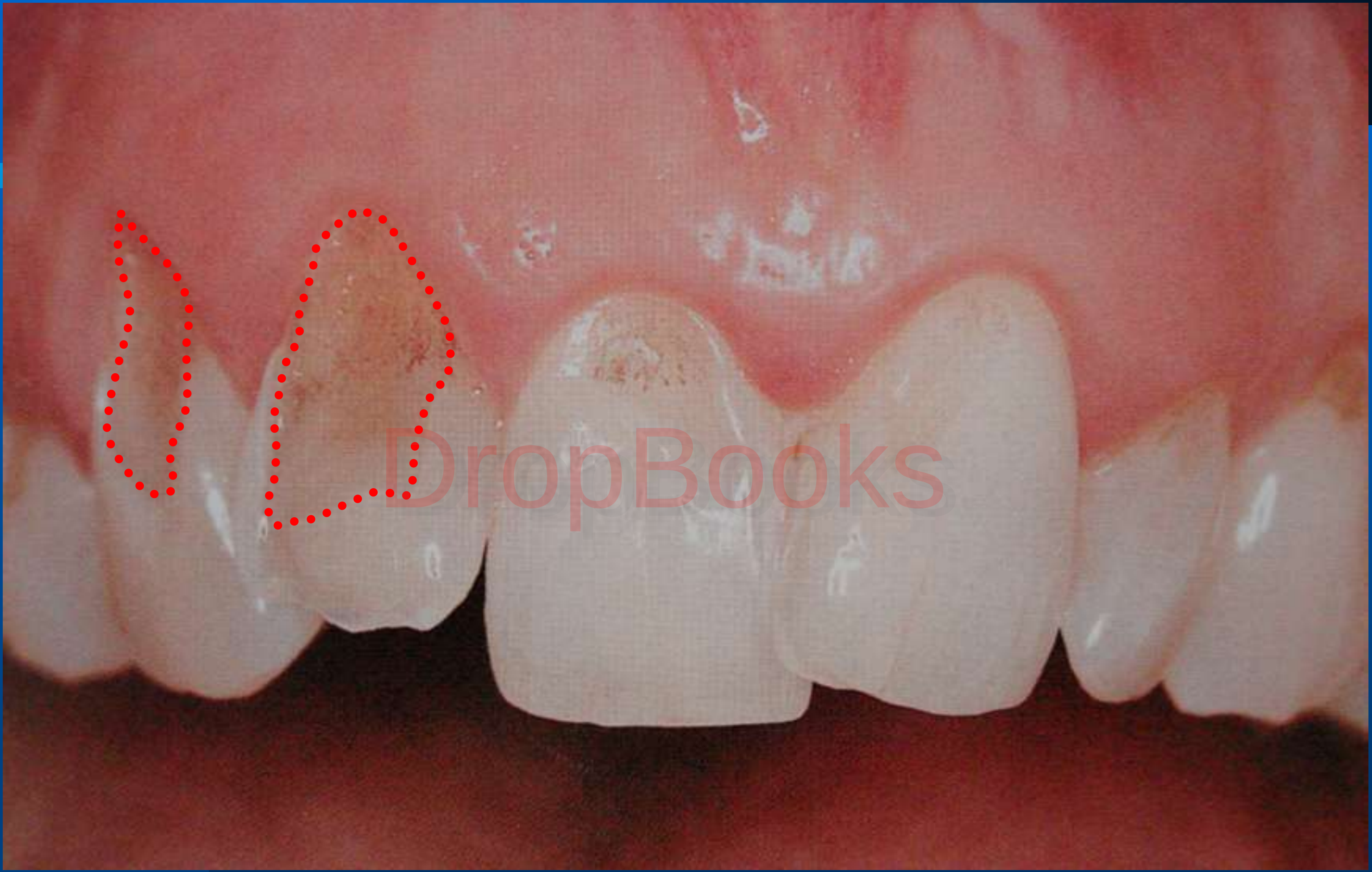


pencils biting resulted in severe wear of front teeth.

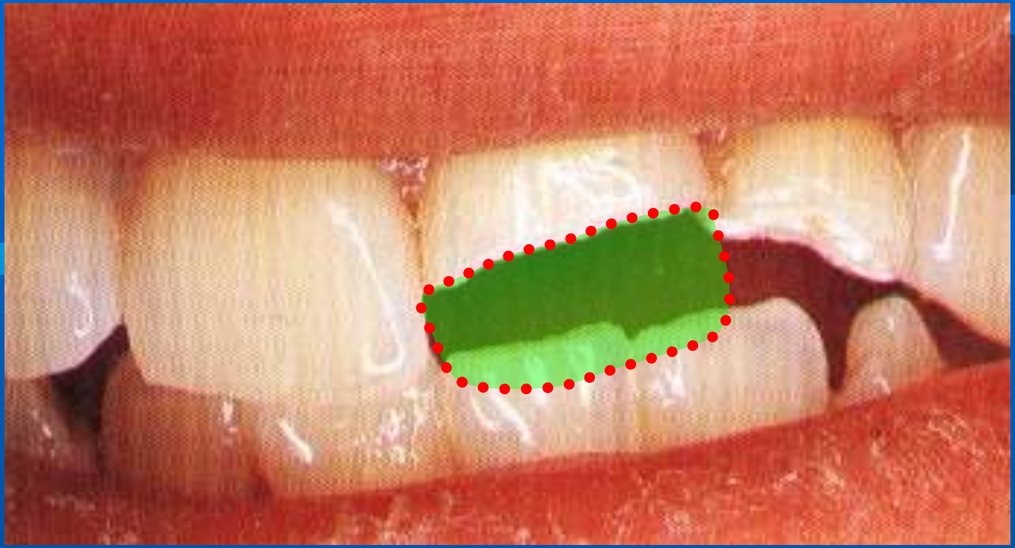




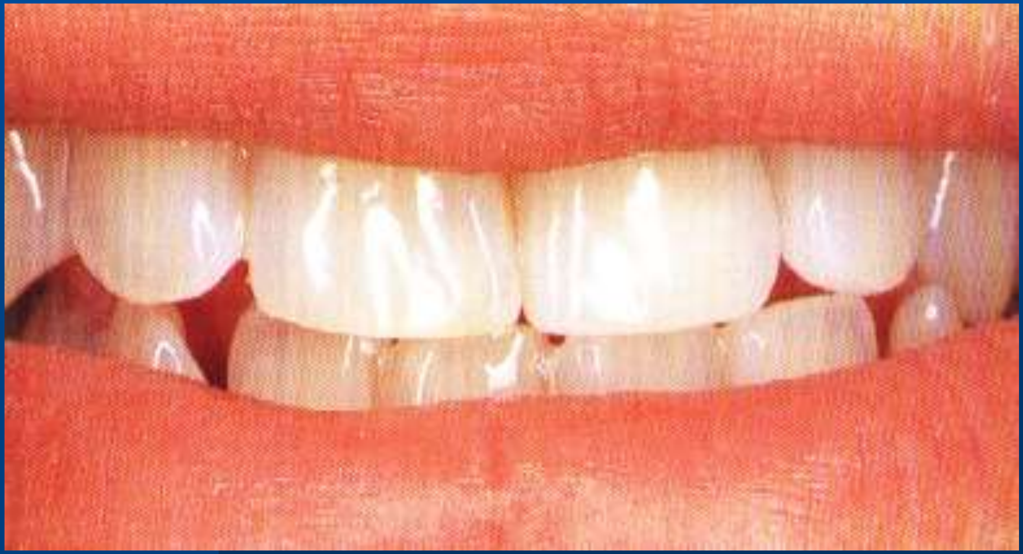
This housewife had a habit of using her teeth to cut sewing thread, resulting in wear and V-notch in the right central incisor.



Extensive loss of supporting enamel



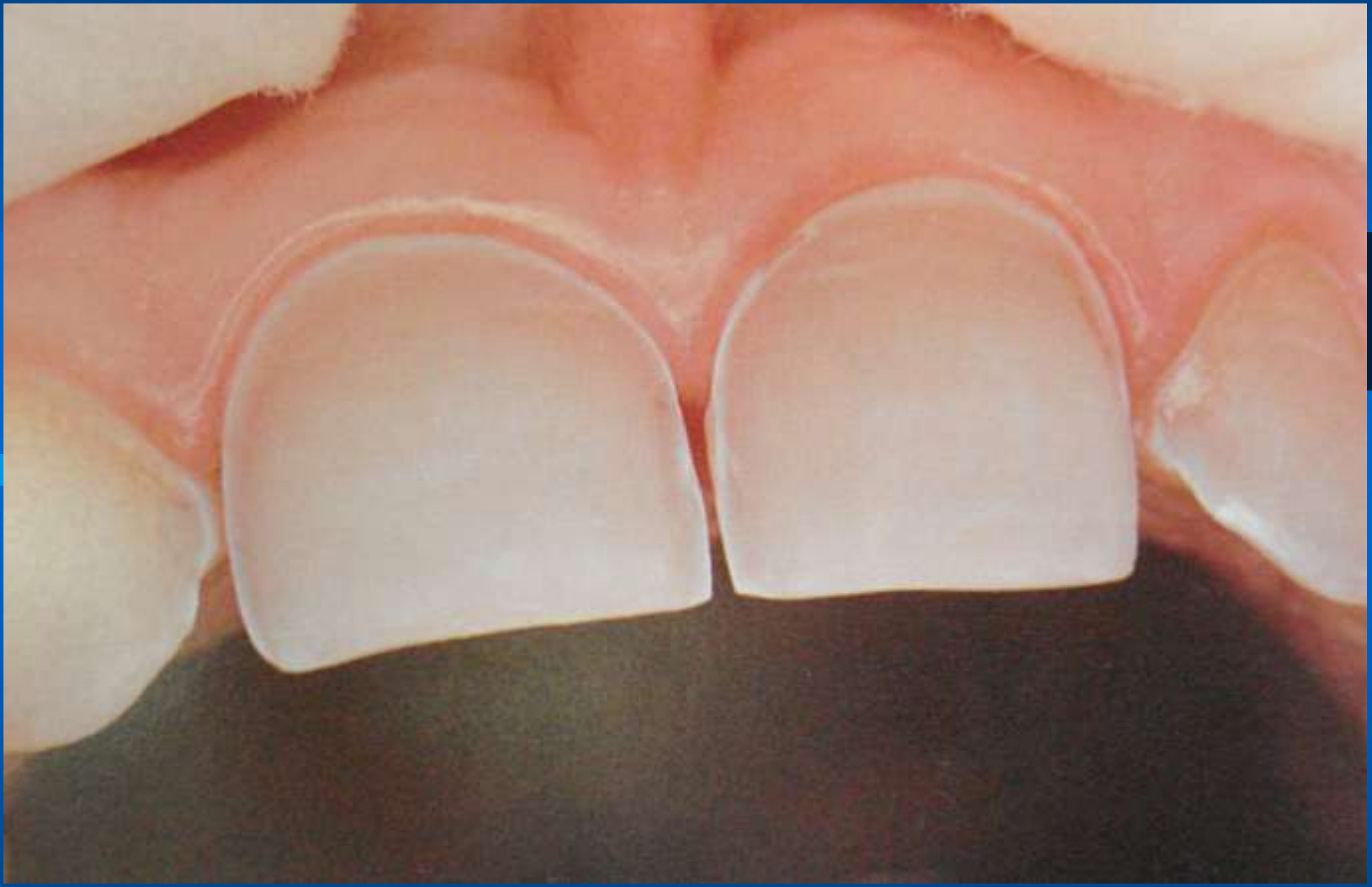
Missing large portion due to fracture



Full coverage crowns

Advantages

1. Minimally invasive treatment method.

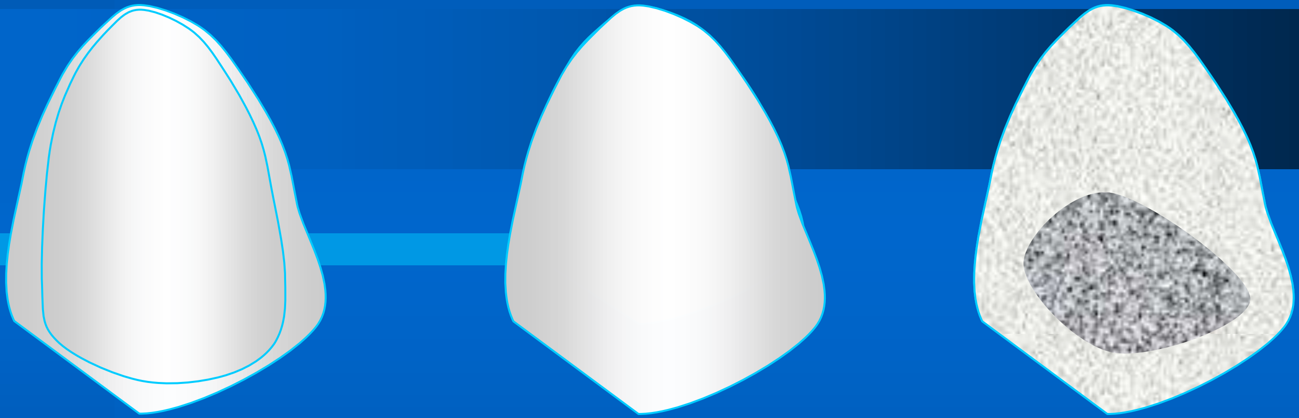


It utilizes minimal tooth preparation mainly confined within enamel. Keeping clear of the gingival margins.

2. Tissue response.

- Minor degree of tissue damage during preparation or taking an impression (usually supra-gingival finish line).
- Glazed porcelain is highly biocompatible.

3. Shape, position and surface appearance can be modified.

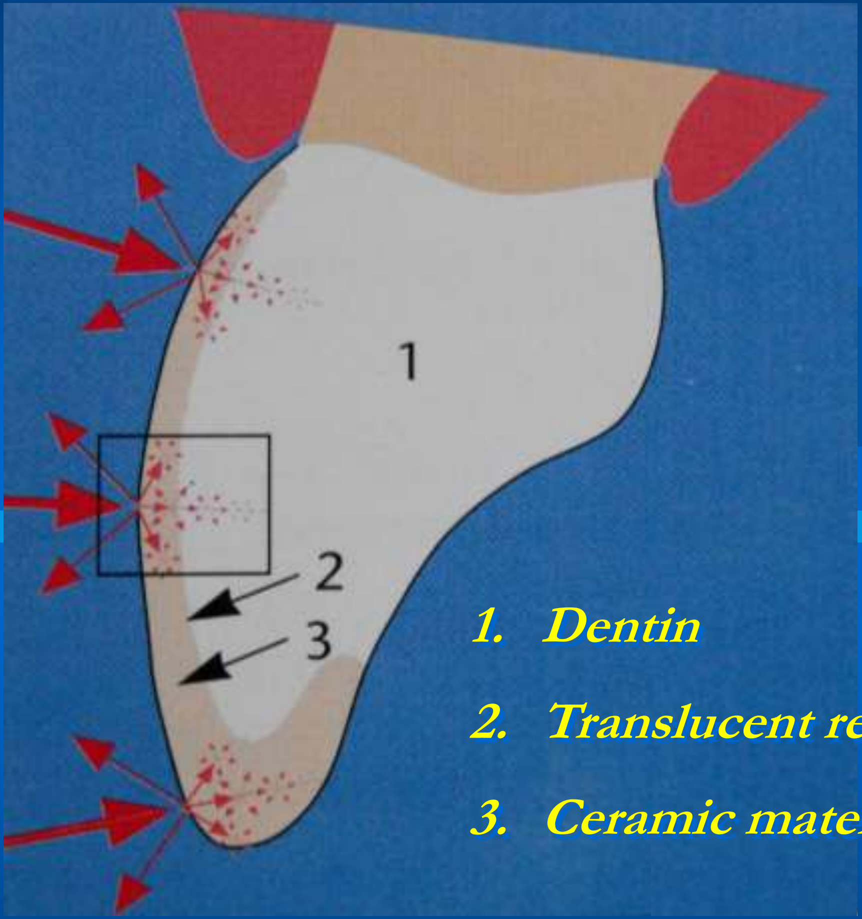


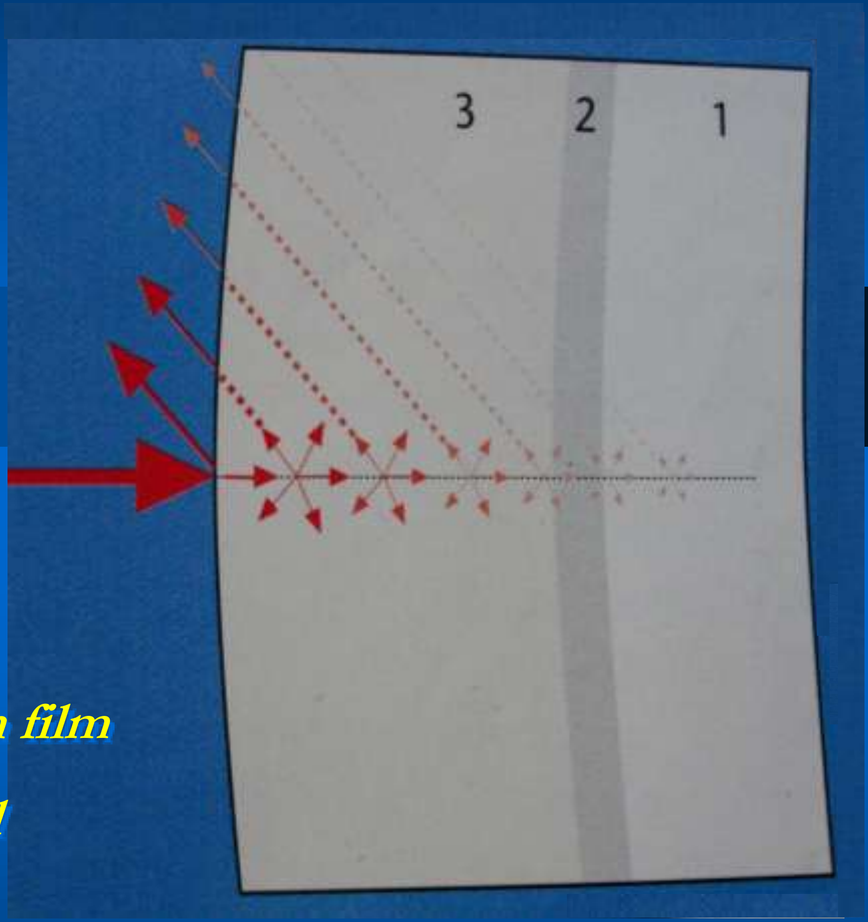
Change **canine** into **lateral** incisor, adjust **tooth length** or transform **surface texture** permanently and elegantly .

4. Effective color change.

When bleaching techniques becomes ineffective, laminate veneers may be the treatment of choice.

5. Light transmission.





1. *Dentin*
2. *Translucent resin film*
3. *Ceramic material*

If the tooth is not stained the laminate veneer should transmit light progressively through its thickness , cement and tooth structure giving a natural appearance .

6. Durability.

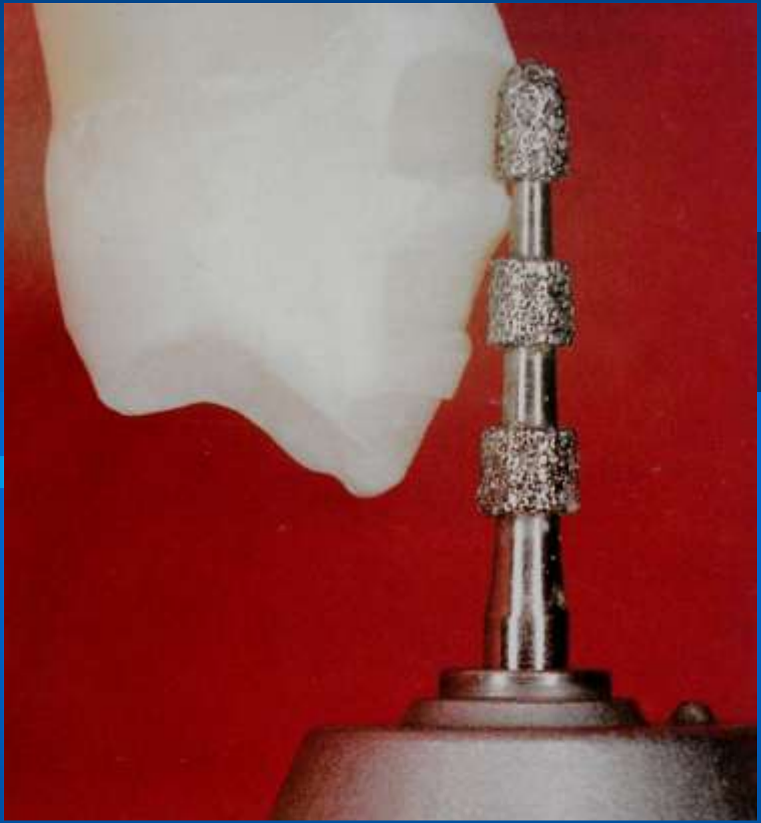
Ceramic laminate veneers show excellent biological, chemical and mechanical properties.

8. Frequently do not require anaesthetic.

The preparation is confined to enamel.

Disadvantages

1.Preparation.



The sophisticated preparation requires a great skill to master the 0.3-0.5 mm preparation.

2. Cost.

Due to the refined lab and dental work

Veneers are expensive.

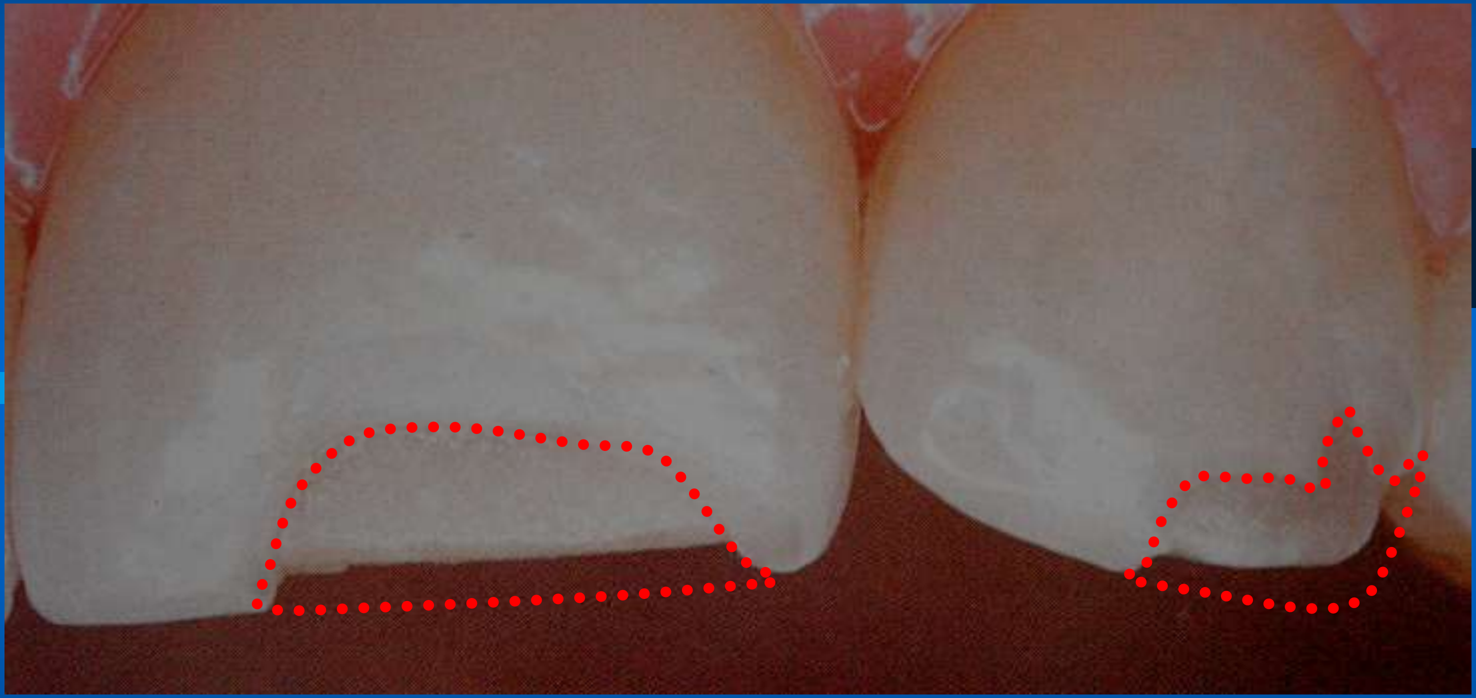
3. Irreversibility.

Unlike bleaching, tooth reduction is required.

4. Difficulty in color matching.

Precise matching of a desired shade can be difficult, with only 0.5mm thickness ,color is adjusted through the cement color.

5. Liability to fracture in stress areas.



Laminates are extremely fragile during the try in and cementation phase.

6. Lack of reparability.

They are difficult , if not impossible to repair, it depends to great extent on the skills of the technicians .

TYPES OF LAMINATE VENEERS.

1. Direct

- *Composite resin material is directly applied to the tooth*

2. Indirect

- **Preformed stock laminates**
  - *Composite resin material*
  - *Ceramic (lumineers)*
  - *Acrylic* (**NOT USED** anymore)
- **Custom made laminates**
  - *Composite resin material , porcelain laminate veneer.*
  - *Ceramic: * castable ceramic “Dicor”*
    **castable apatite “cerapearl”*

1.Direct

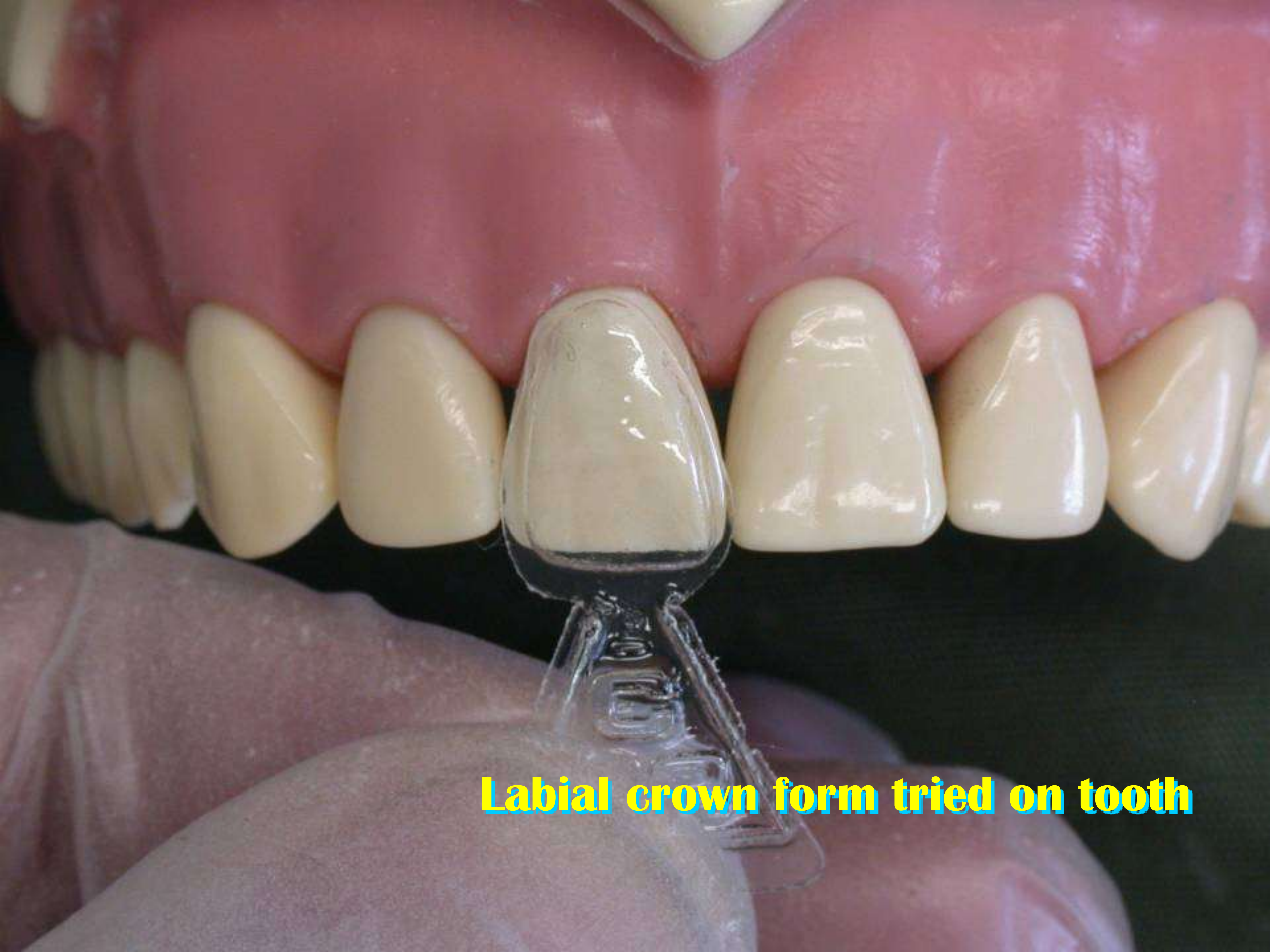
(inside the mouth)

Light-cured composite resin build up to cover the entire visible etched enamel surface.

When adding Composite resin for a direct veneer we may:

1) Use a labial **crown form**.

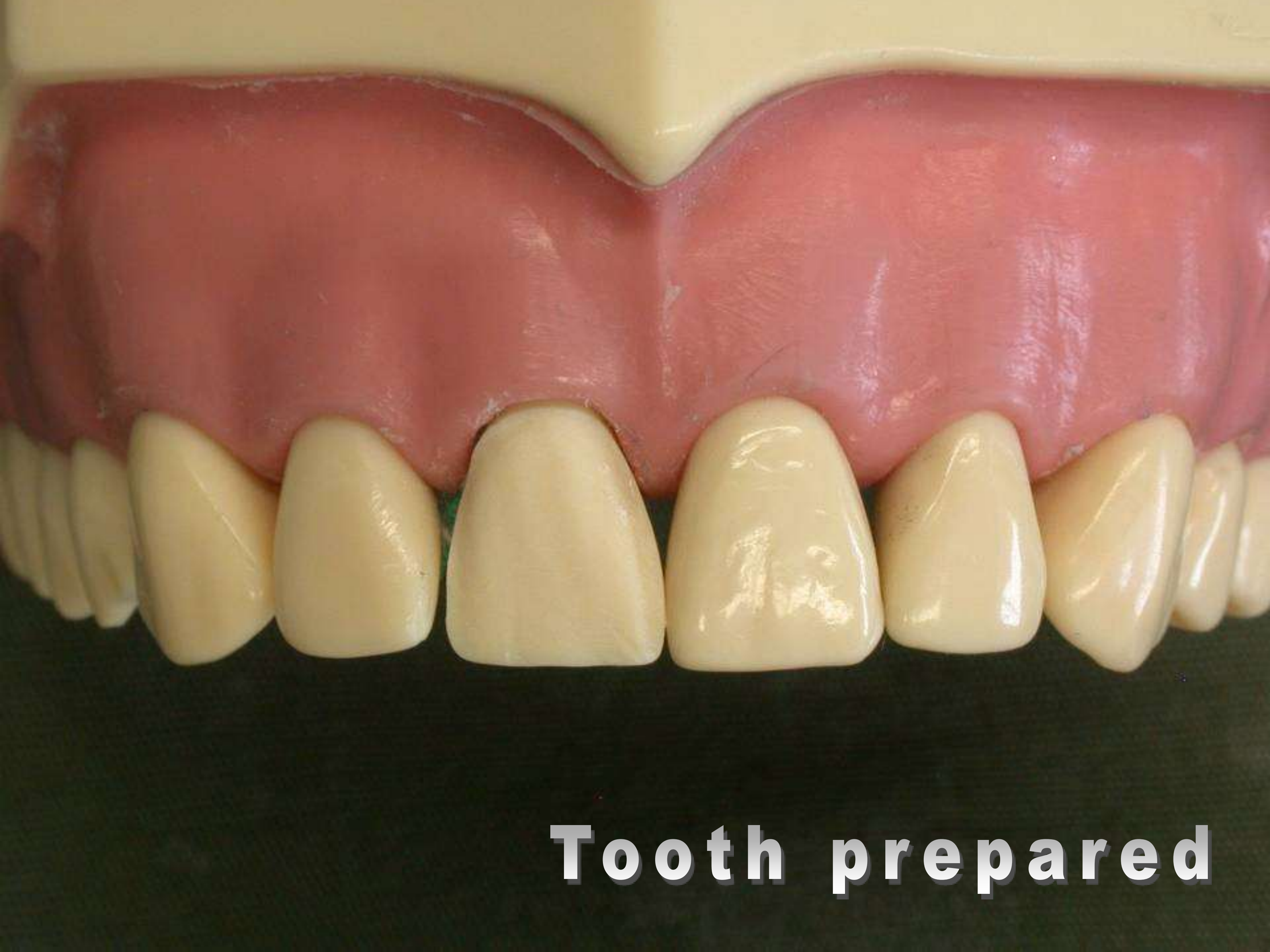
2) Add C.R. **free-hand**.



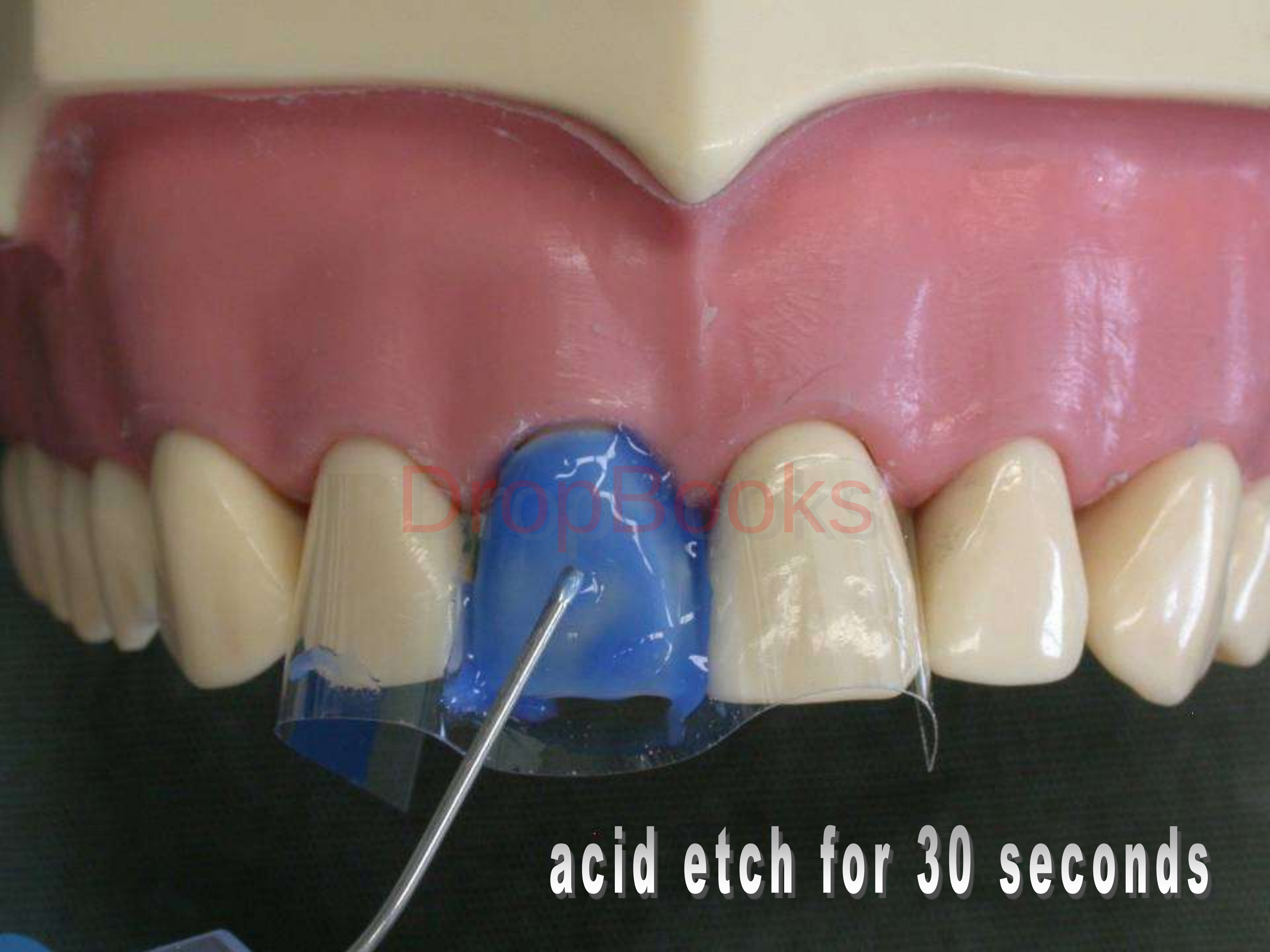
Labial crown form tried on tooth

Preparation procedure

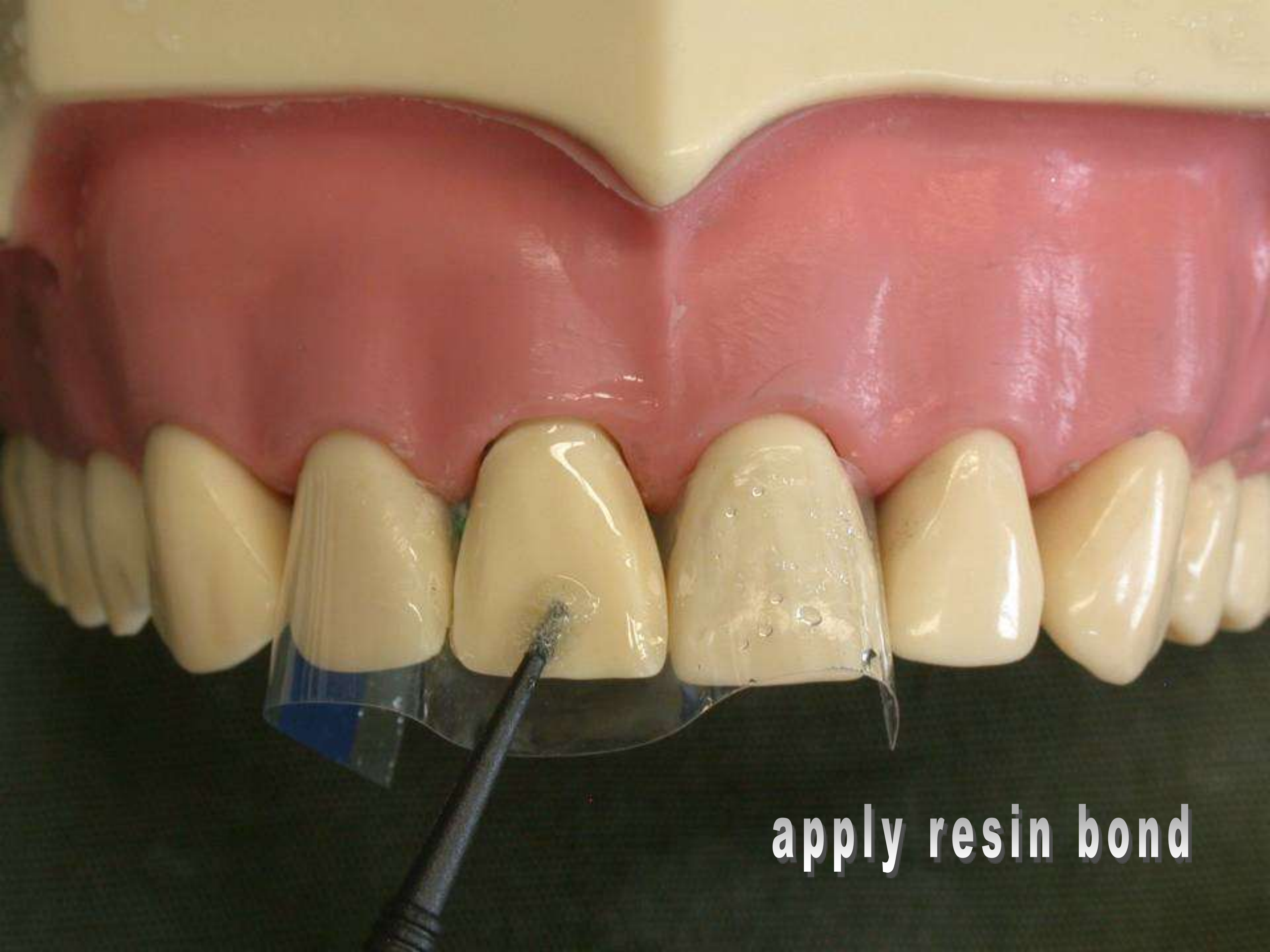
- Retraction of gingiva and isolation of tooth to prevent contamination.
- Reduction of the labial surface 0.5mm just after the labio-proximal line angels ,supra-gingival finish line as possible ,shallow chamfer F.L.
- Etching of enamel with 35%-4o% phosphoric acid then rinsing with water and dryness.
- Paint with bonding agent then apply composite resin.
- Contouring ,and shaping to the proper size then finishing and polishing.
- Sometimes an opaque layer of composite is added first in case of deep stained teeth.
- Light curing composite is preferred than chemically cured due to more color stability



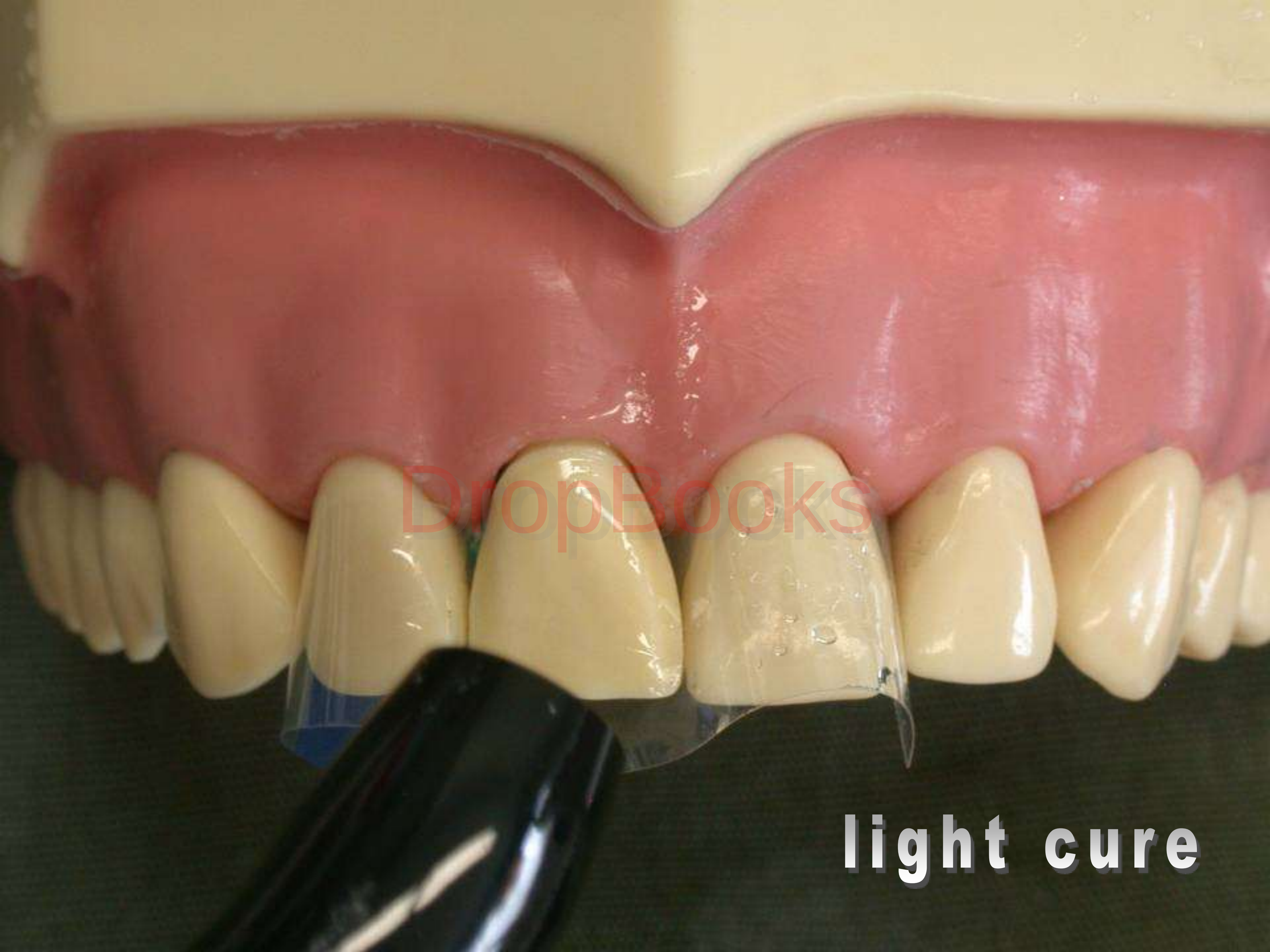
Tooth prepared



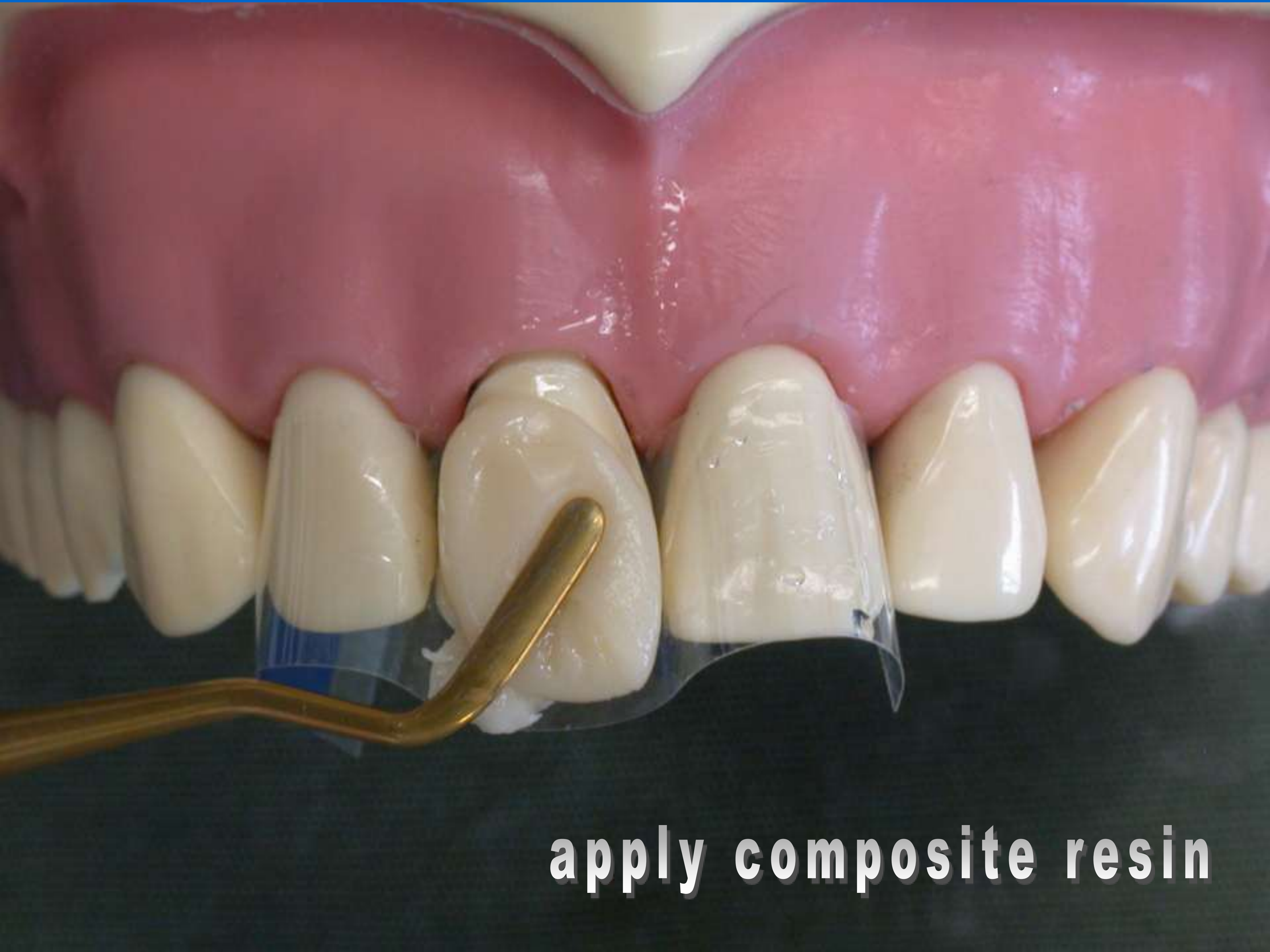
acid etch for 30 seconds



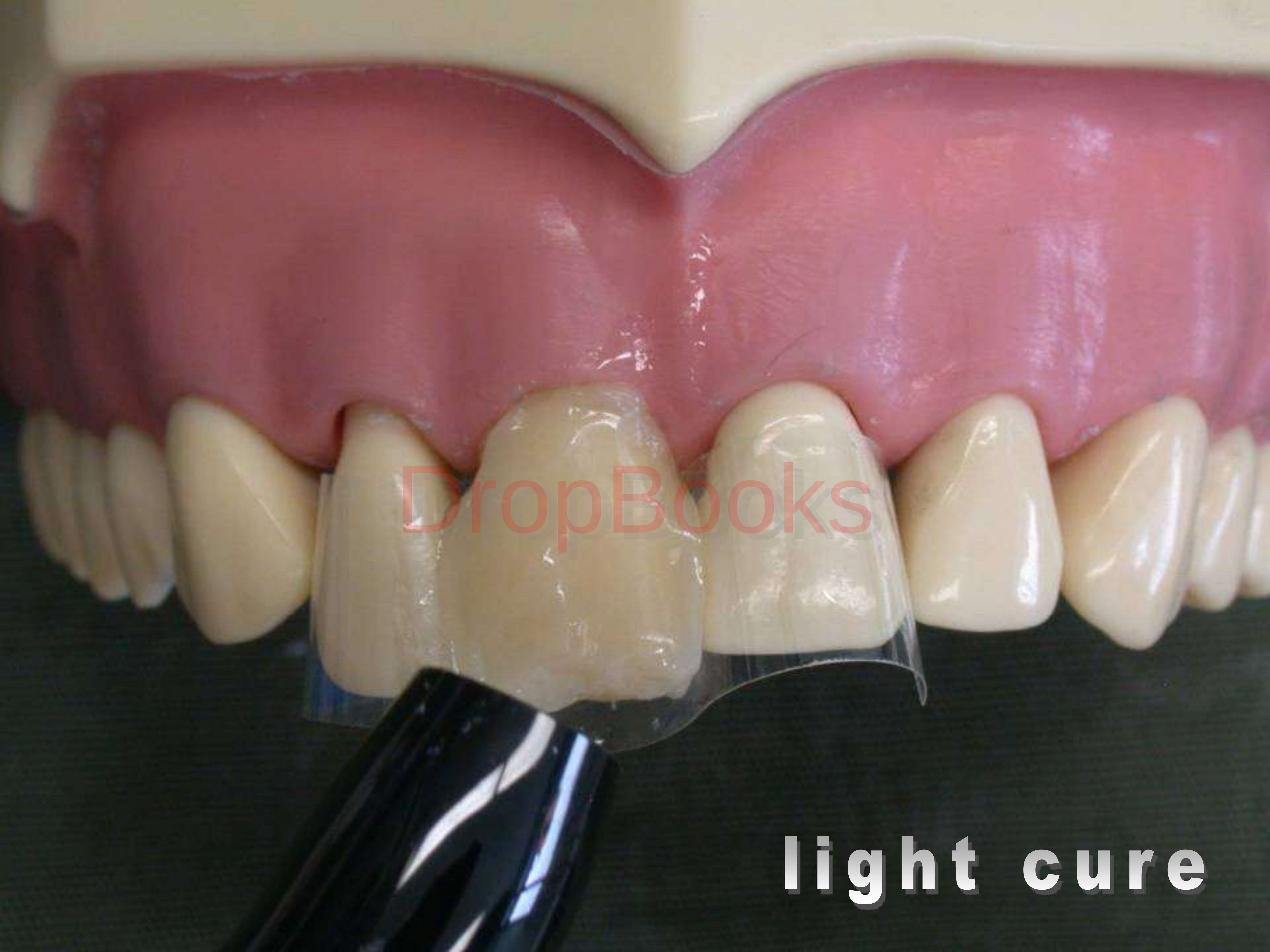
apply resin bond



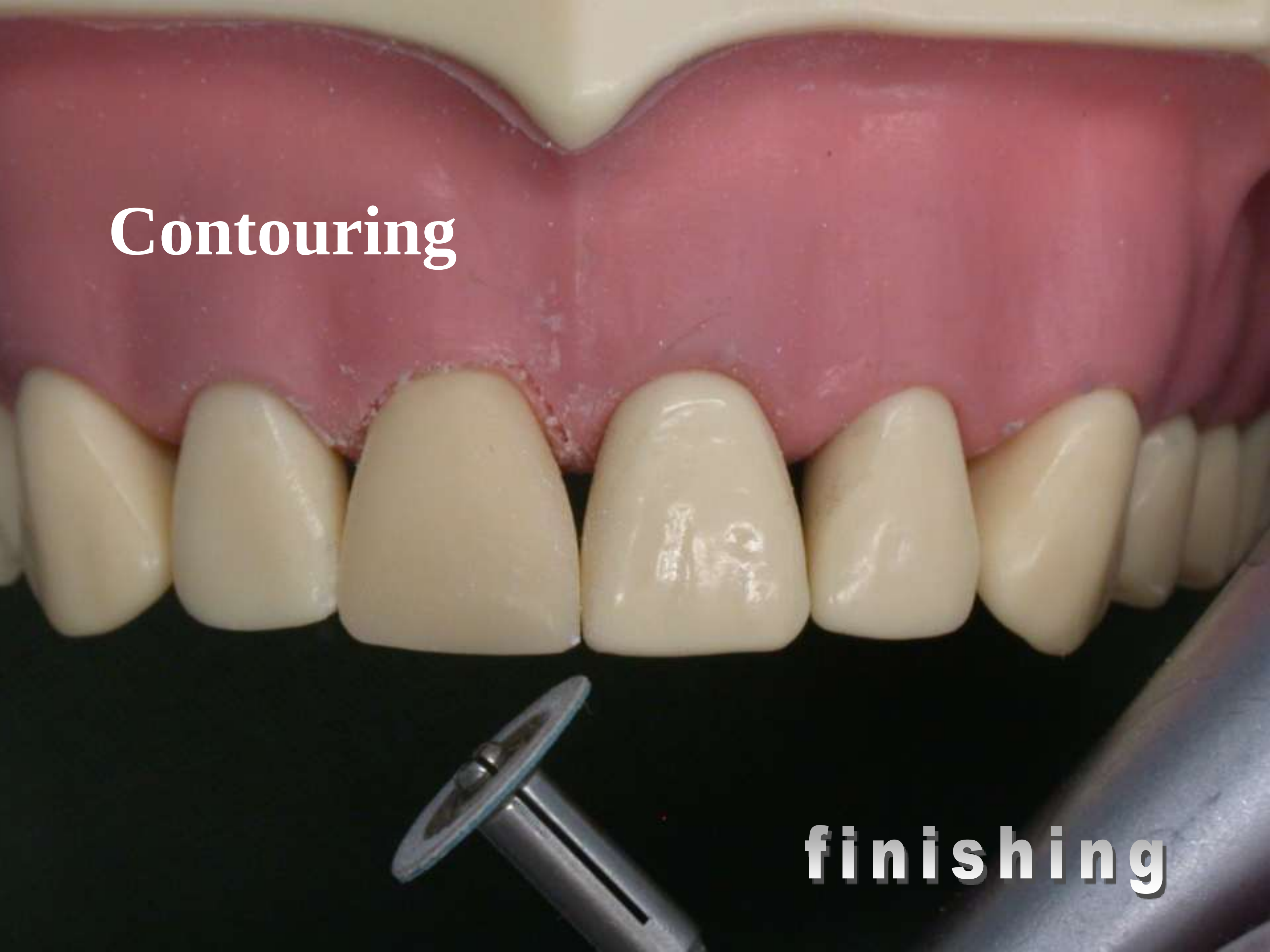
light cure



apply composite resin



light cure



Contouring

finishing

Advantages Of Direct Composite Veneers

- Only **one appointment** is required.
- The dentist directly **controls color** and **form.**
- **Cost** is reduced.
- **Repairable.**

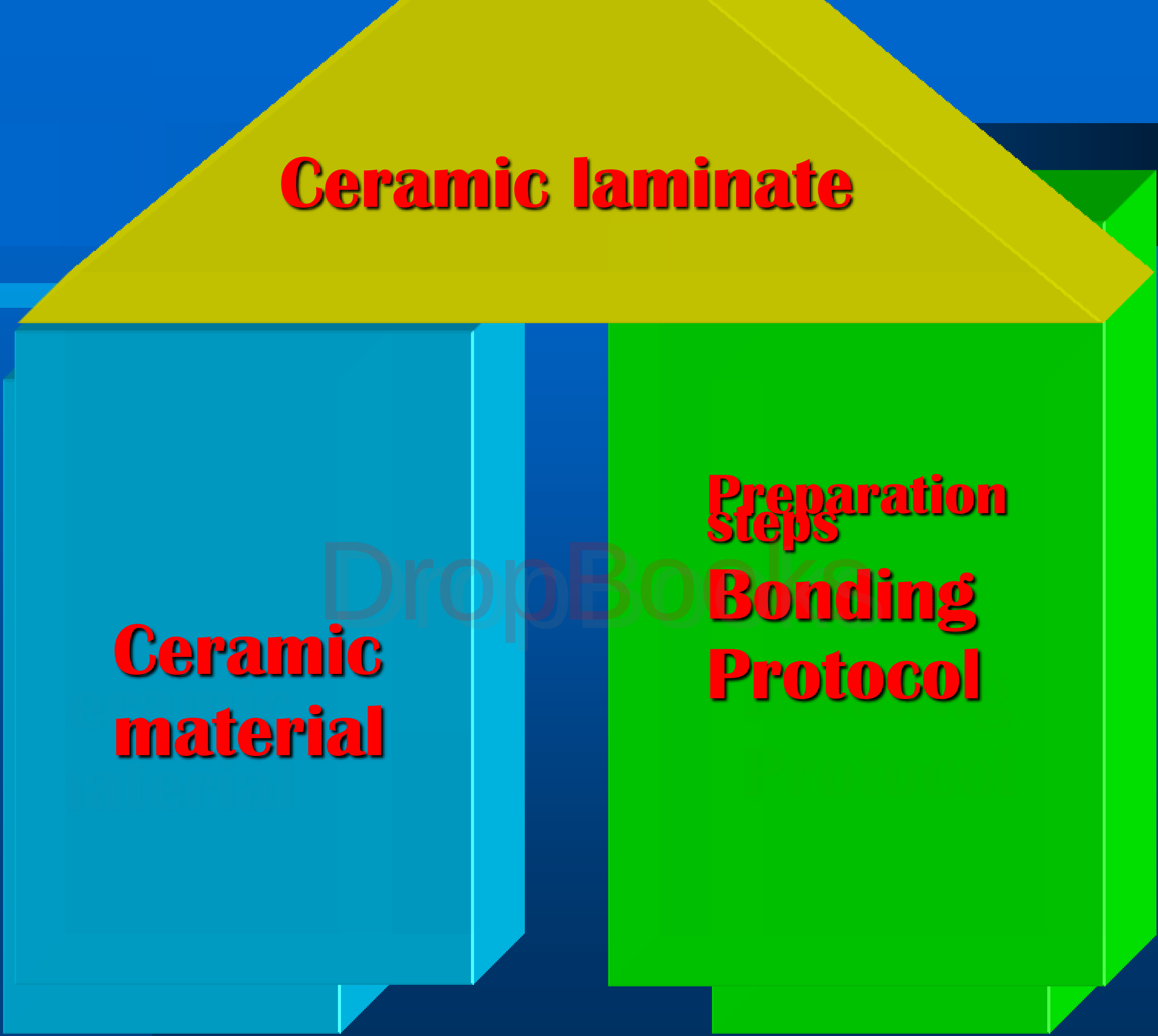
Disadvantages Of Direct Composite Veneers

- **Time** consuming.
- Requires **artistic skills.**
- Exhibit poor color stability and wear resistance.(composite disadvantages)

2.Indirect
(outside the mouth)

- **Preformed stock laminates**
  - ***Denture teeth that had been ground.***
  - ***Preformed laminate produced by dental manufactures.***

The most proper size is selected and adjusted directly in the patient mouth or indirectly on a cast, the steps of etching and bonding are carried out.



Ceramic laminate

Ceramic material

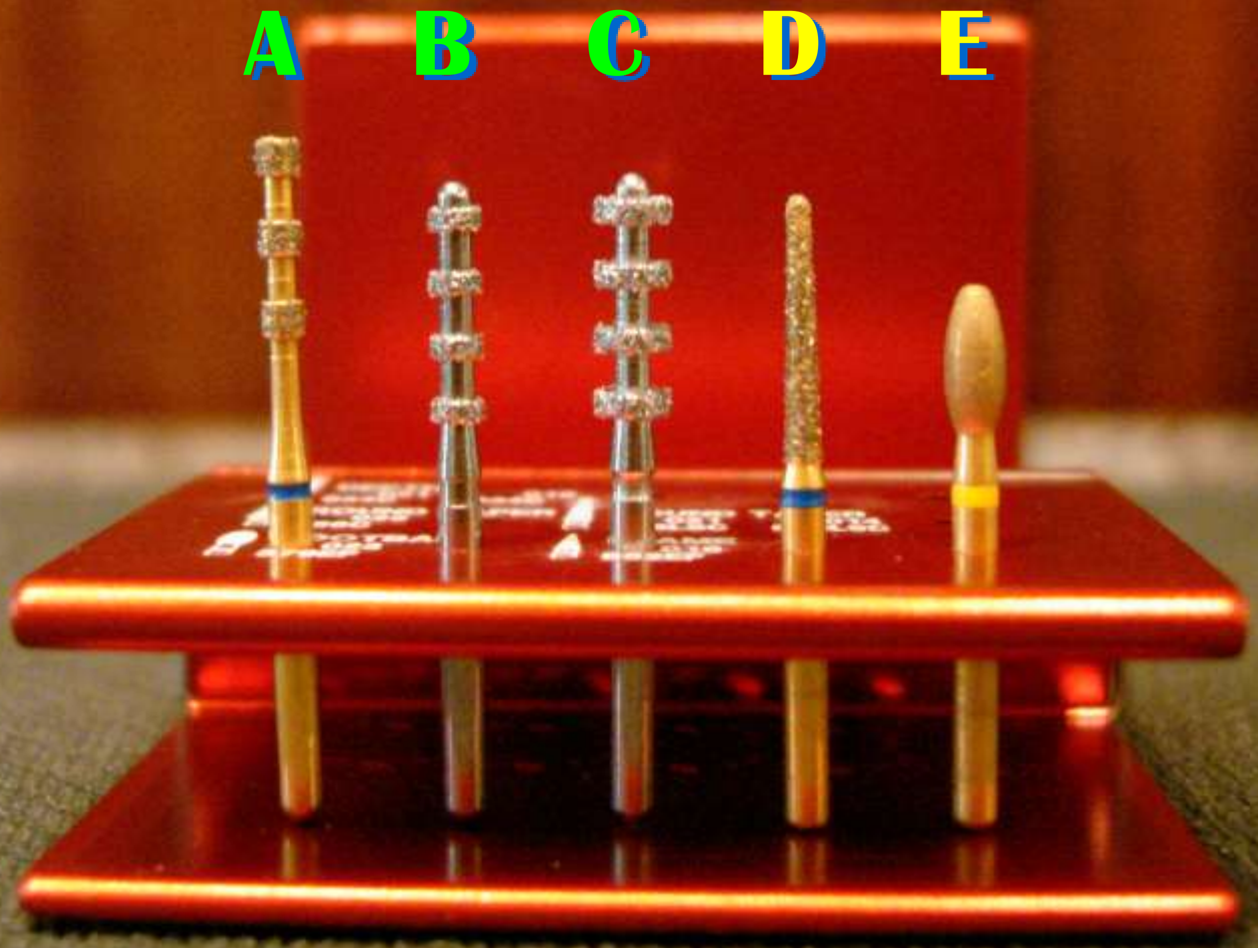
Preparation steps

Bonding Protocol

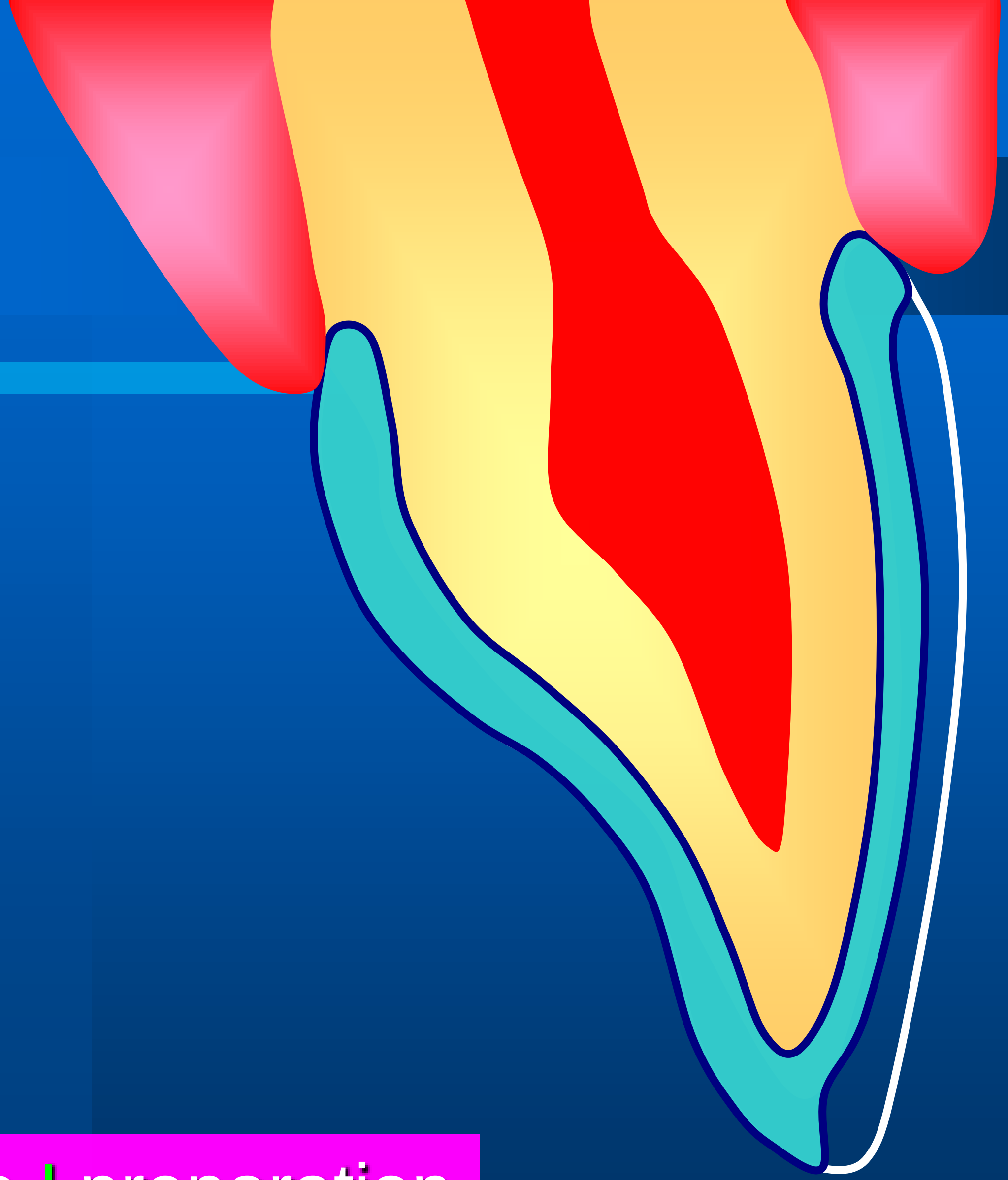
A,B,C Depth cutter wheels

D. Tapered with round end

E. Olive (American football)



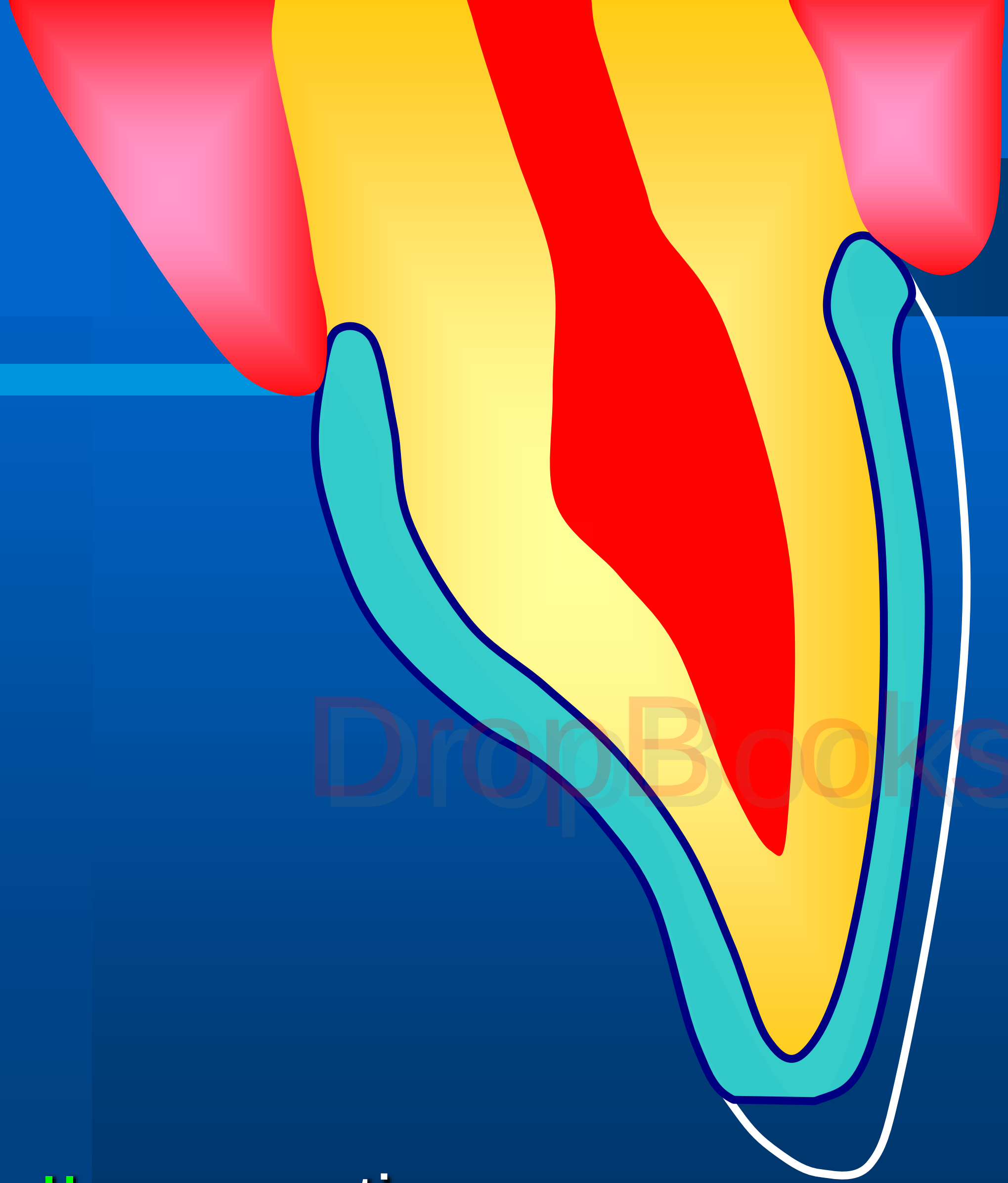
Types of preparation



Contact lens like preparation

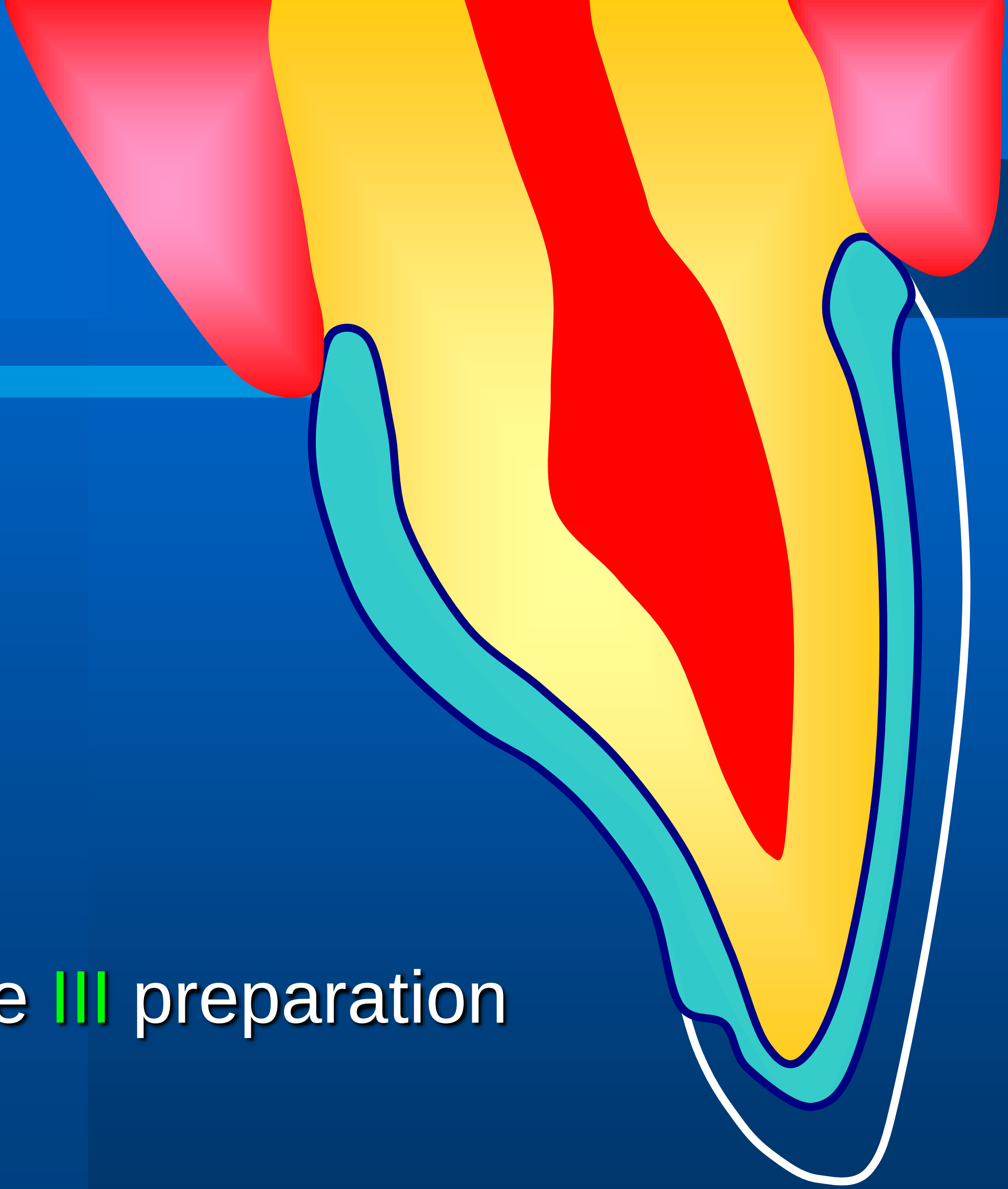
Preparation without overlapping incisal edge

Type I preparation



Type II preparation

Preparation with
overlay incisal edge



¾ like preparation

Type III preparation

Preparation with overlapping incisal edge

- path of insertion is critical

Type **III** preparation is preferred by many authors because :it is more fracture resistance

- It **restricts angle fractures**. When the free edge is not overlaid, the incisal third of the laminates is very thin (**less than 0.3 mm**) and liable to fracture.
- It enhances **esthetic properties of laminates.**

- Places the porcelain in **compression** rather than tension.
- Vertical stop.
- Increase area for bonding

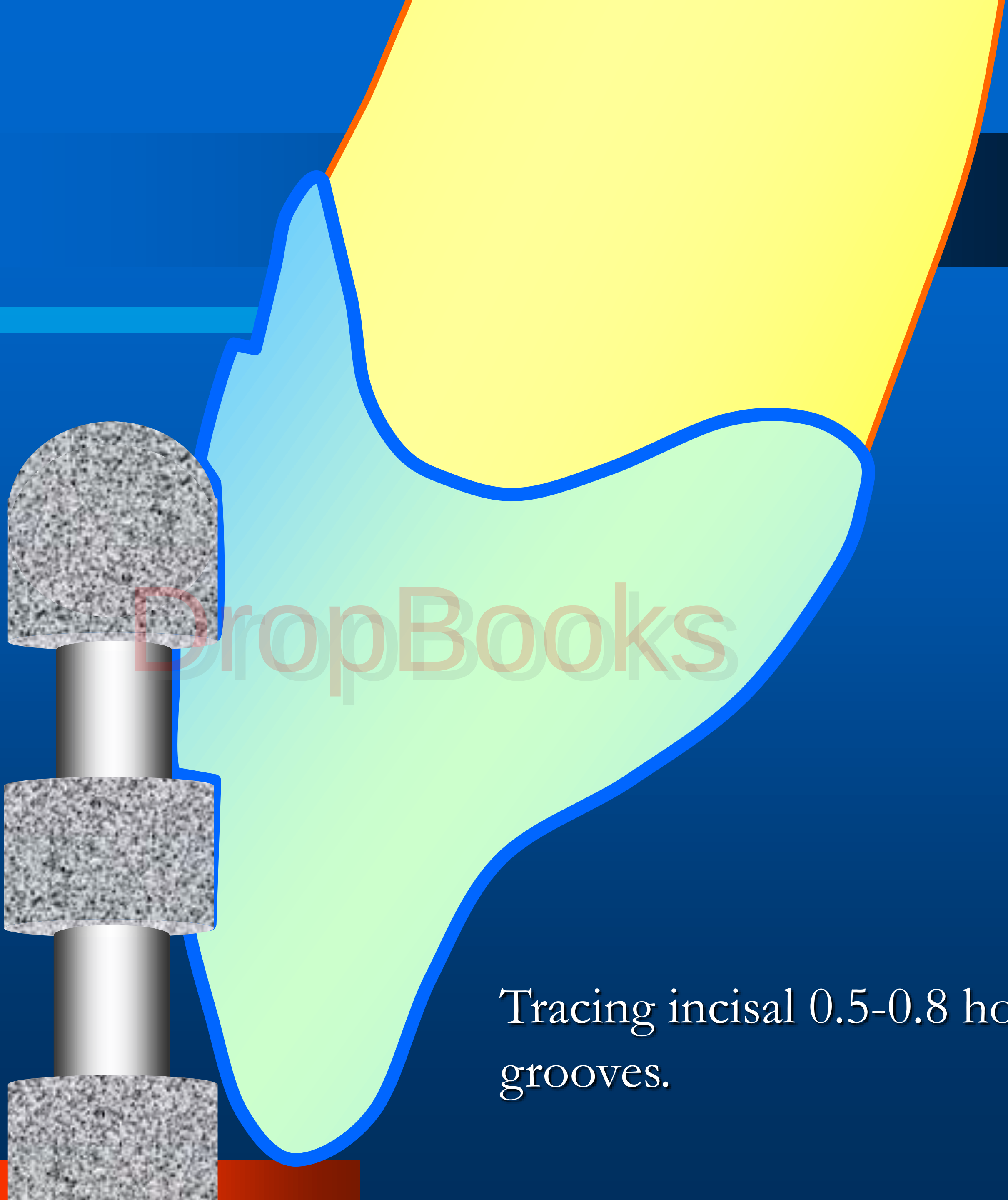
- **Facial reduction**
  - Gingival third : 0.3 – 0.5 mm
  - Middle & Incisal : 0.5 - 0.8 mm
- **Incisal reduction** 1– 1.5 mm (For type II & III prep)
- **Lingual reduction** 0.5– 0.7 mm (For type III prep)

- Instrument used : 2 Depth cutter wheels followed by Round-end tapered diamond.
- To achieve:

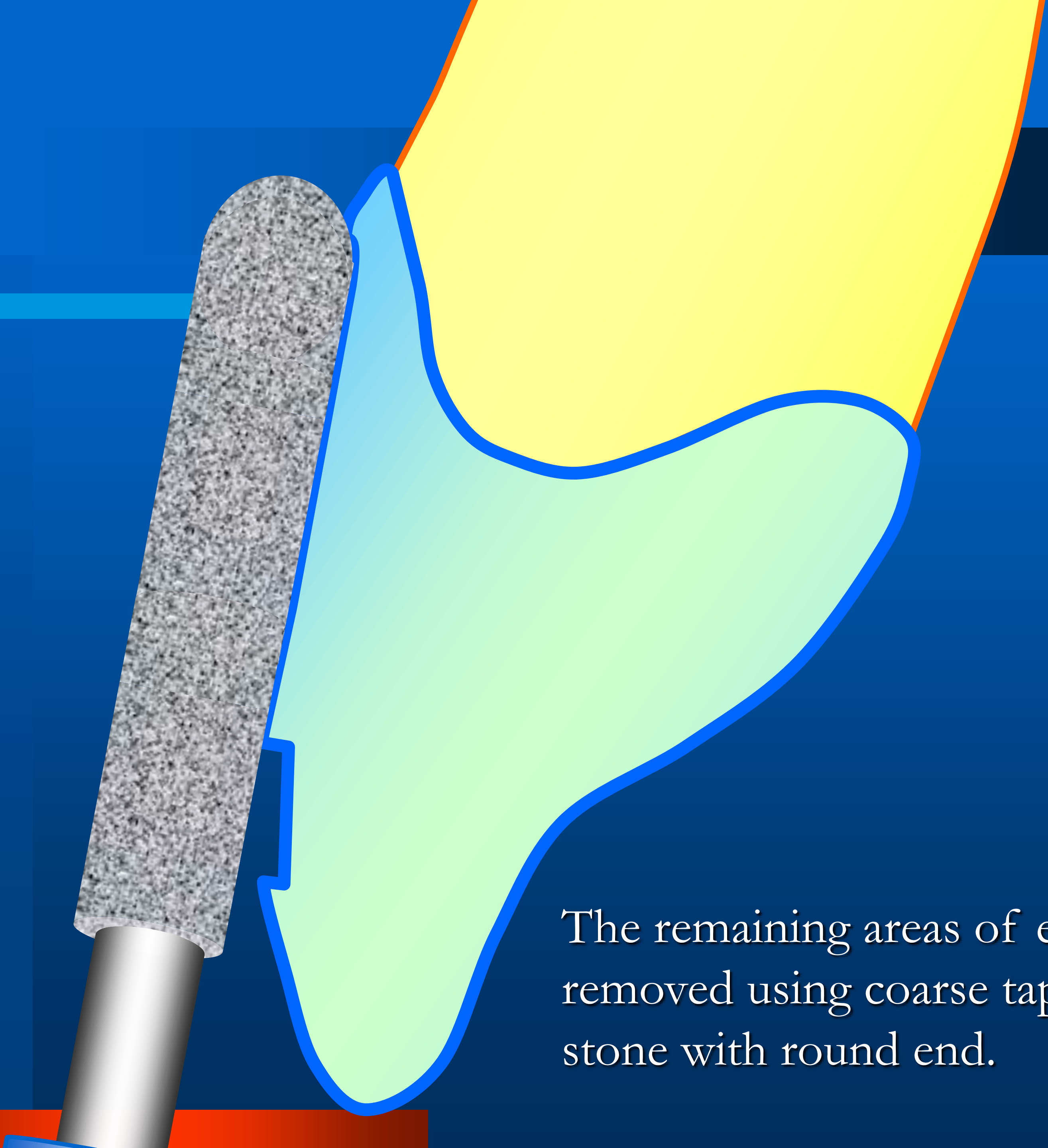
a) Clearance of 0.3-0.5 mm gingival and 0.5 -0.8 mm incisal.

b) In lower incisors a cervical depth of 0.3 mm often expose patches of dentin.

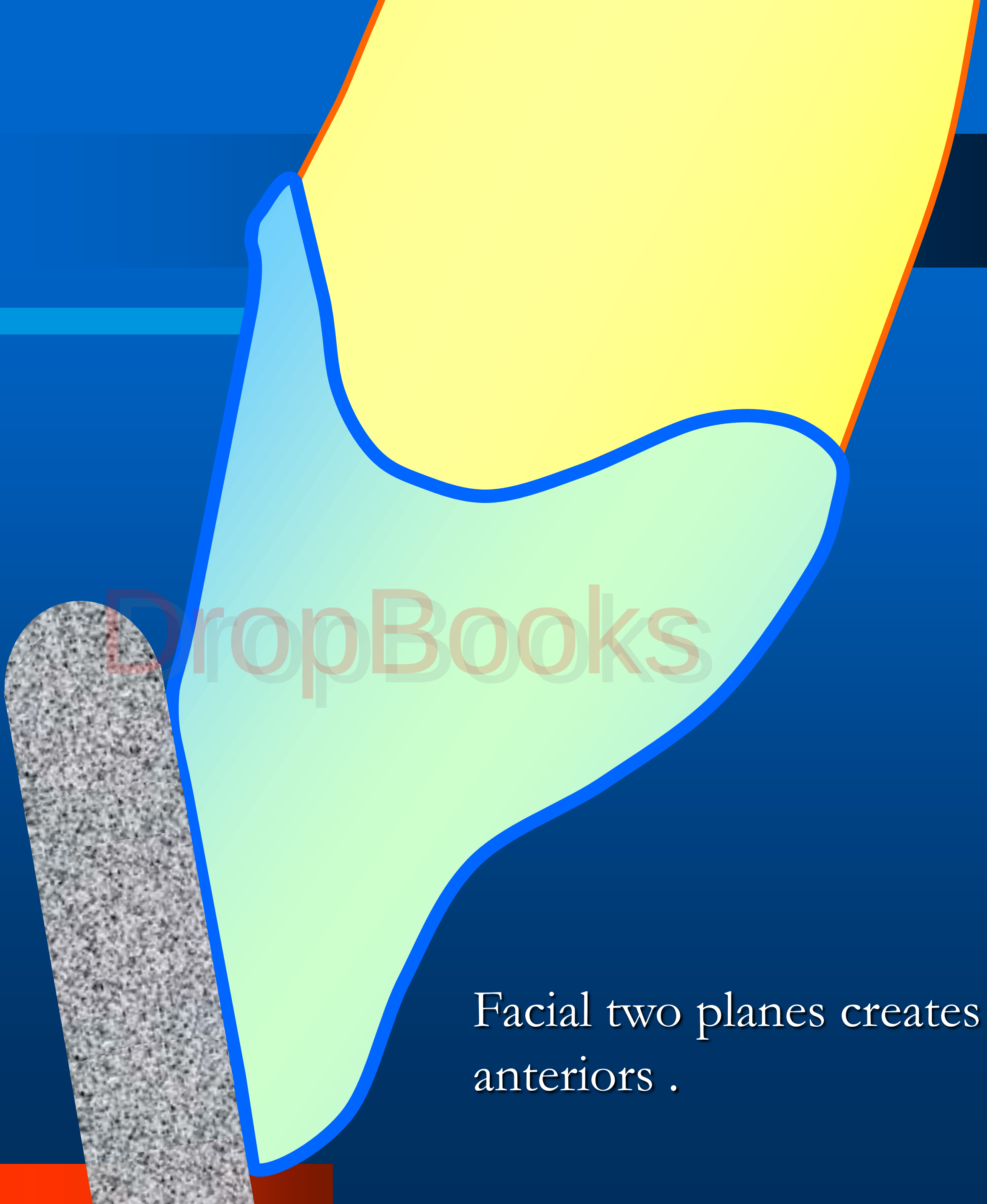
Tracing gingival 0.3-0.5 horizontal grooves away from the margins



Tracing incisal 0.5-0.8 horizontal grooves.



The remaining areas of enamel removed using coarse tapered stone with round end.

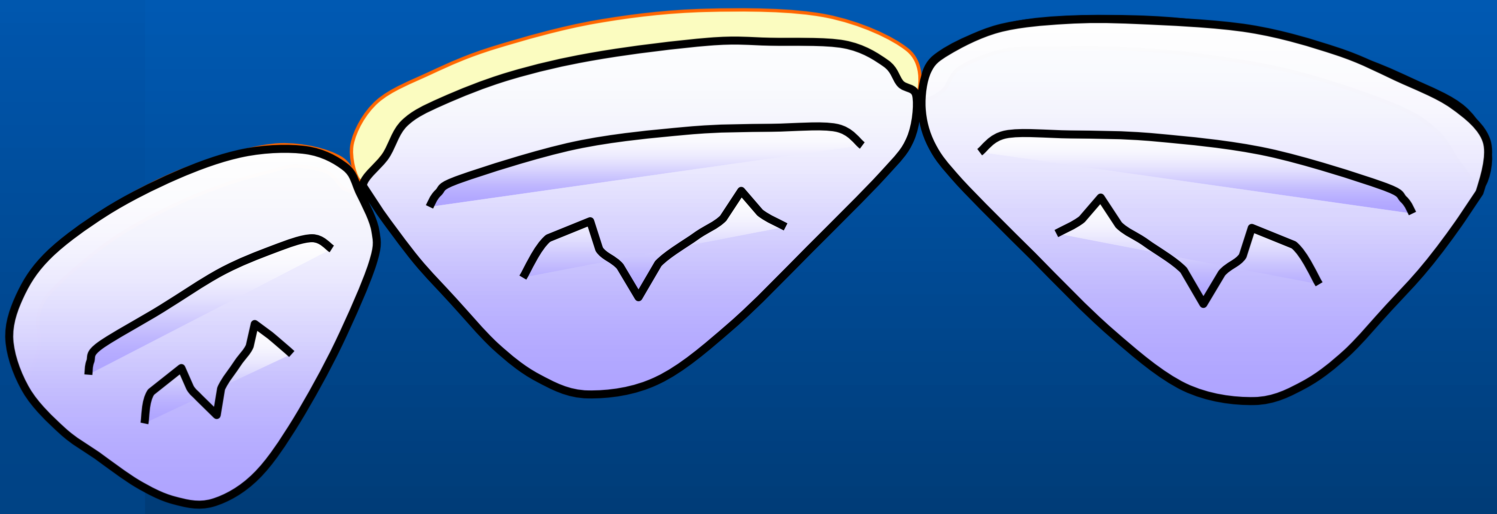


Facial two planes creates in upper anteriors .

- A **0.3 mm** chamfer or **0.5 mm** in deep discoloration, placed **juxtagingival** or very slight **supra-gingival**.
- The supra-gingival margins remain **invisible** because of their **optical properties.**
- In cases of **severe discoloration** a **0.5 mm** deep **subgingival finish line** is established.

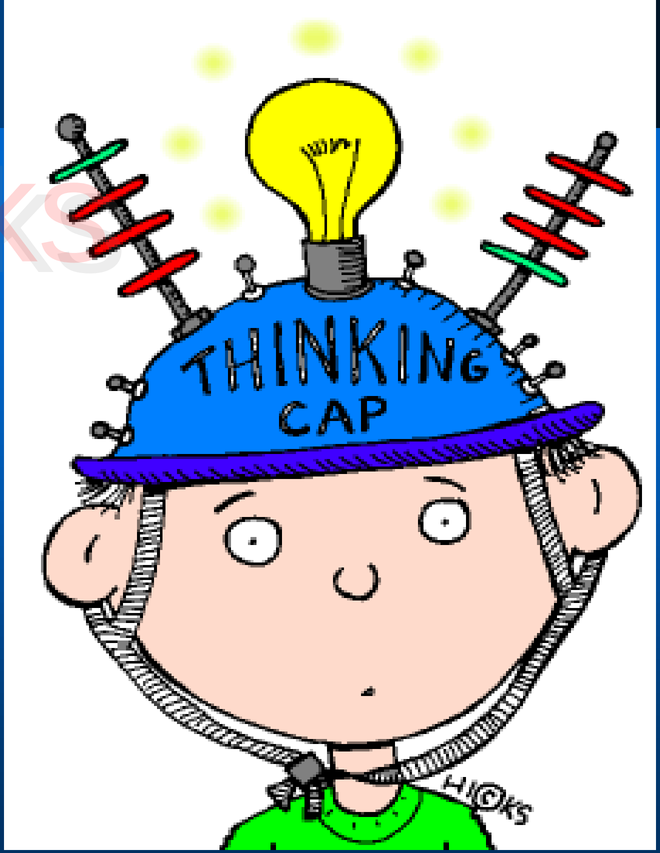
Step 2

proximal Reduction

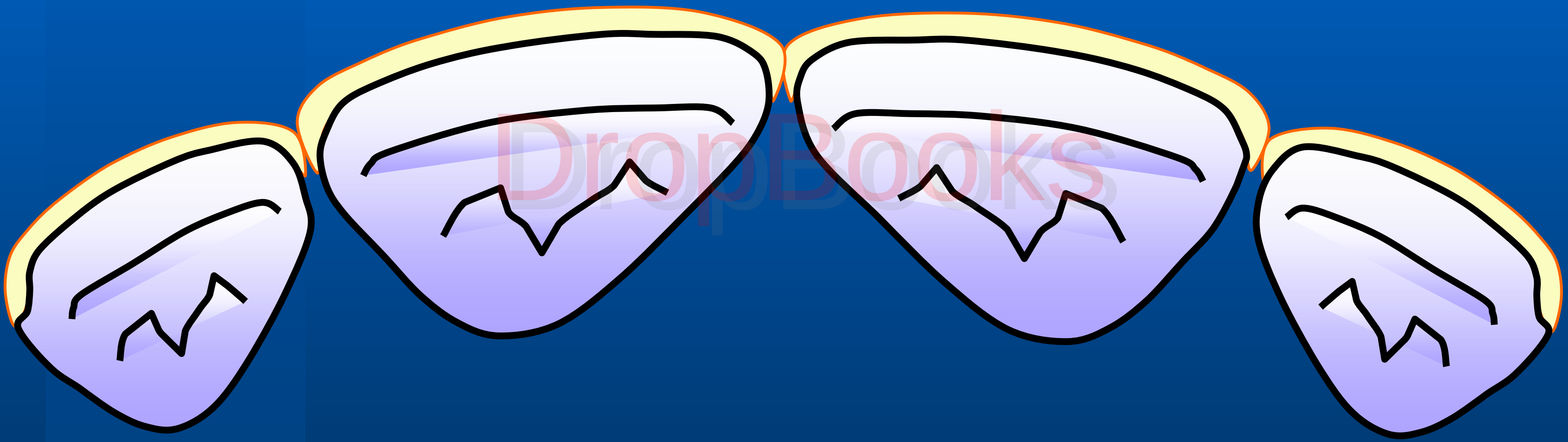


Contact area preserved

When not preserve the contact area?



1. **In cases where proximal contact is lost**
    - **Multiple spacing.**
    - **Diastema.**
    - **Proximal restorations.**
    - **Broken angles.**
    - **Mal-positions.**
2. **In cases of multiple laminates (to facilitate separation of the dies without damaging the inter-proximal finish line).**



Step 3

Incisal Reduction

Lingual Reduction

In type II and III preparations

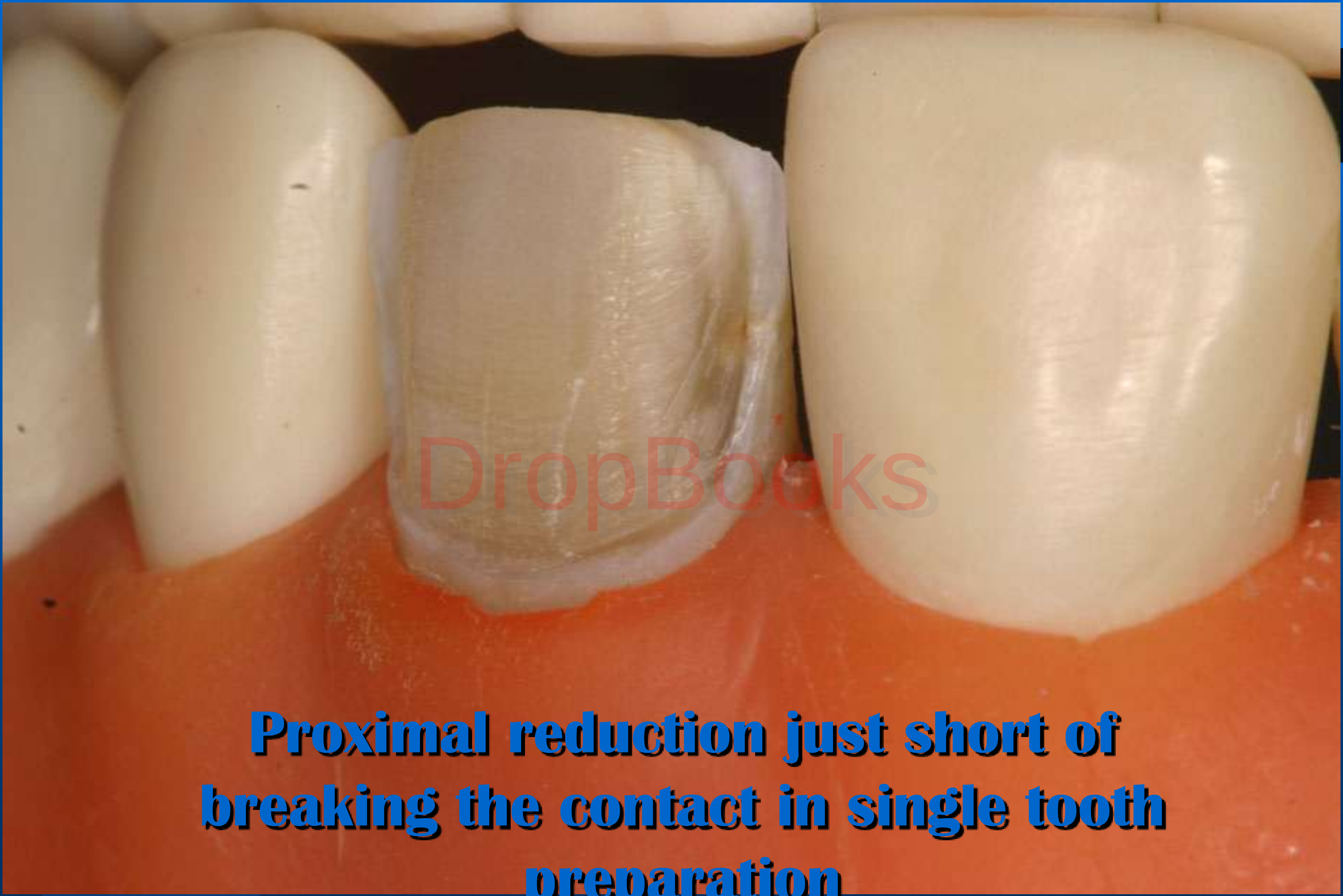
- A **1-1.5 mm reduction** for better strength and esthetics.
- 1.5-2 mm used for canines and lower incisors.(over-lap of the upper teeth).
- On mandibular incisors the incisal edge should be reduced (type II or III is a must)
- Incisal reduction should be **uniform** (horizontally) for more uniform esthetics

- A **0.5 mm lingual chamfer** finish line is created holding a round end tapered stone parallel to lingual surface.
- The lingual finish line should be approximately **¼ the way** down the lingual surface.
- In extremely **thin teeth** , lingual finish line placed on **incisal edge.**

Step 5

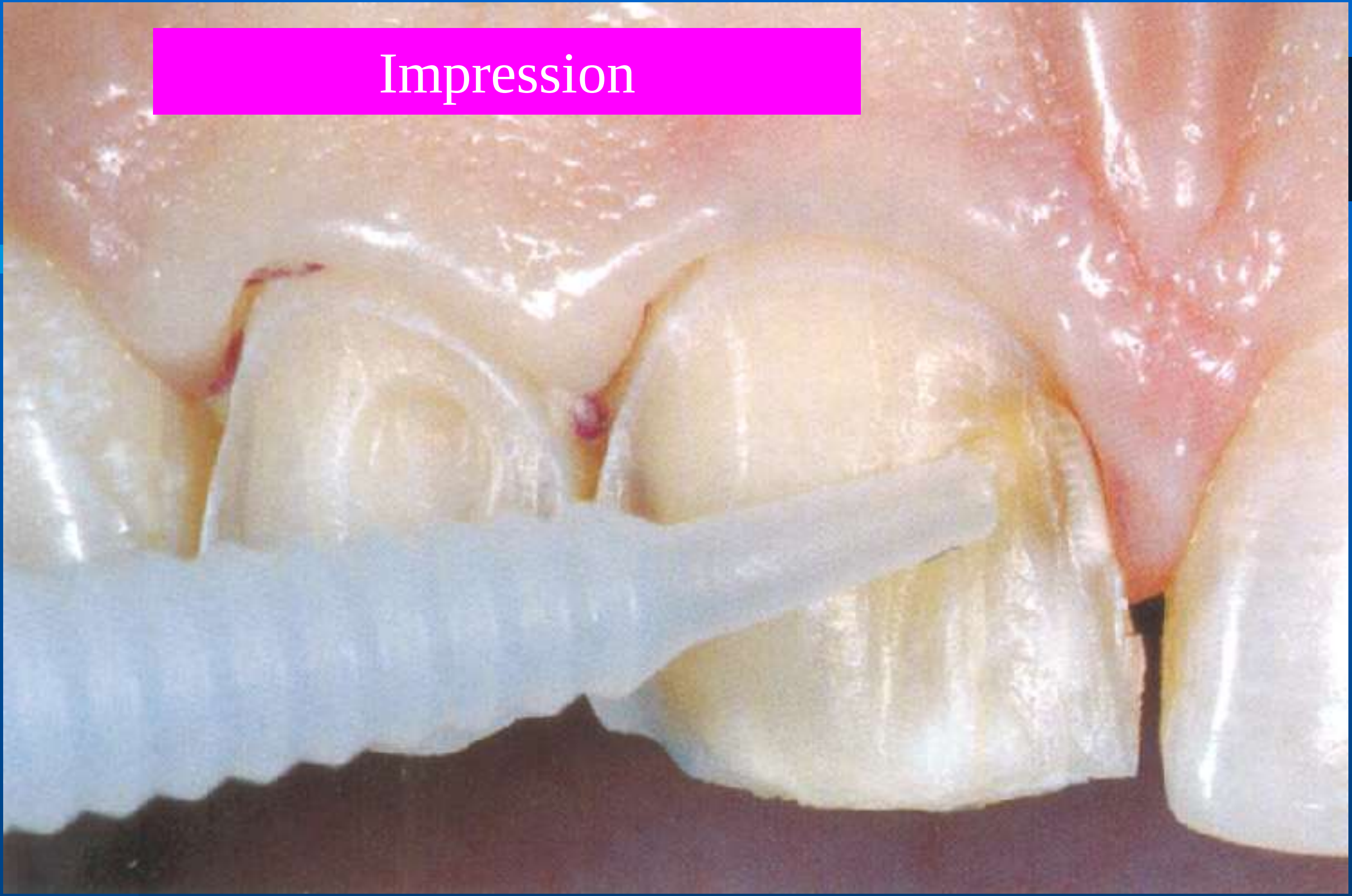
Finishing the preparation

- All **sharp** point and line angles should be **rounded**.
- Using fine grit (yellow coded) tapered diamond stone.

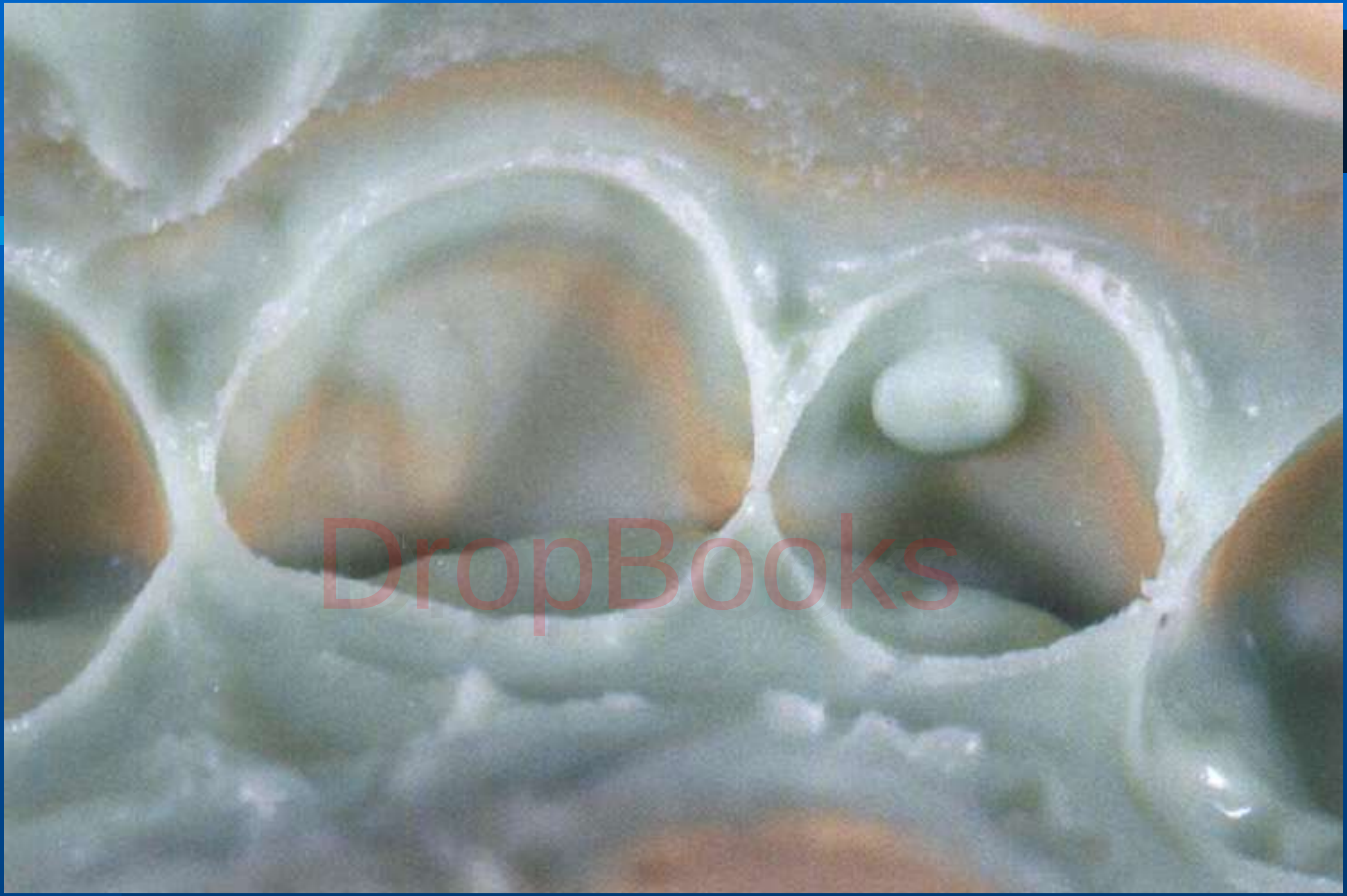


Proximal reduction just short of breaking the contact in single tooth preparation

Impression



Low or ultra-low viscosity Polyvinyl siloxsane is injected by a syringe



Impression completed

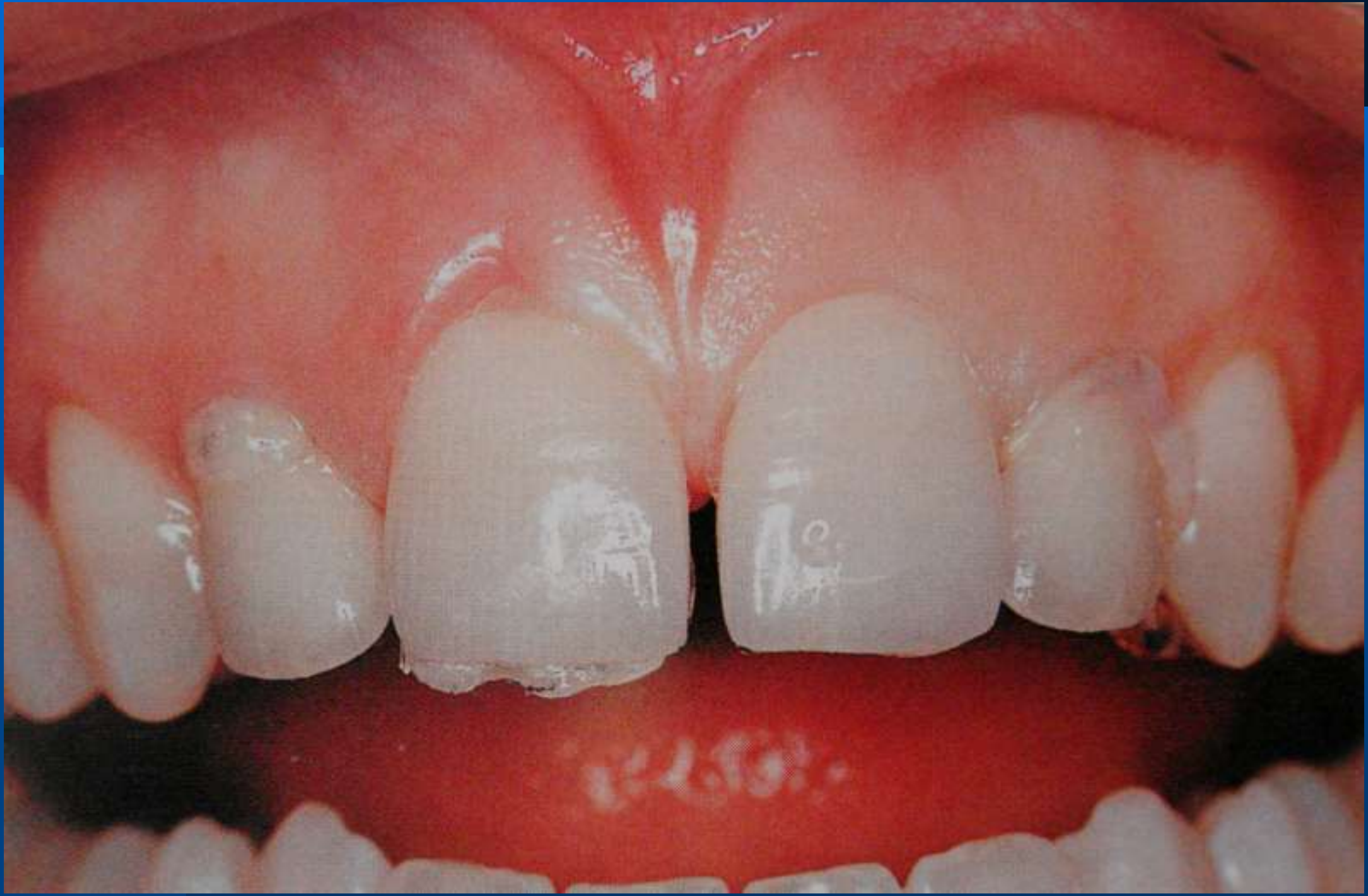
Ceramic veneers Fabrication techniques

- Direct build up of Feldspathic porcelain

  (VM9)

  - Platinum foil technique
  - Refractory die technique
- Pressed ceramics
- Machined ceramics

- The laminates should be tried with utmost care **without pressure** to:
  - Monitor the **color**.
  - Determine the **color** of the **composite cement.**
  - Check the **fit** of each laminate veneer.
- Occlusion should be neither checked nor adjusted before the laminates have been **bonded**.



Bonding Steps

1. Cleansing the teeth
2. Cleansing the laminate veneer
3. Etching the laminate veneer
4. Silanization of the laminate veneer
5. Etching of tooth
6. Primer on the tooth and the laminate veneer

7. Cementing

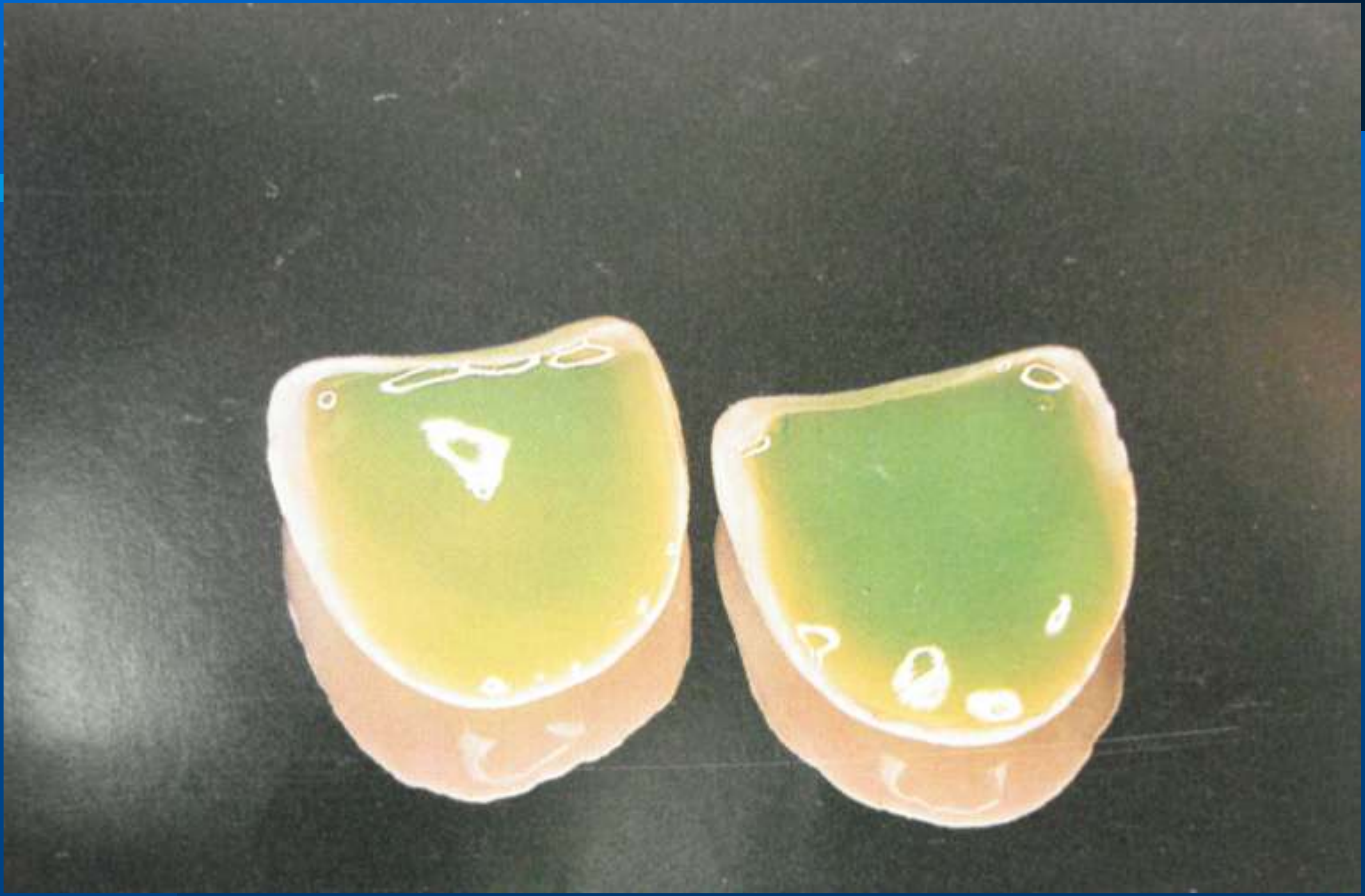
8. Removal of excess cement

9. Light curing (for light cured and dual cured cements)

10. Finishing

Etching the laminate veneer

- Each ceramic requires a different **substance**, **concentration** and **period of time** for etching;
  - 10% **ammonium difluoride** gel for glass ceramics.
  - 2-10% **hydrofluoric acid** gel for other ceramics.
  - In-Cerams could not be etched.
- Neutralizing: 2 minutes in **sodium bicarbonate** gel.



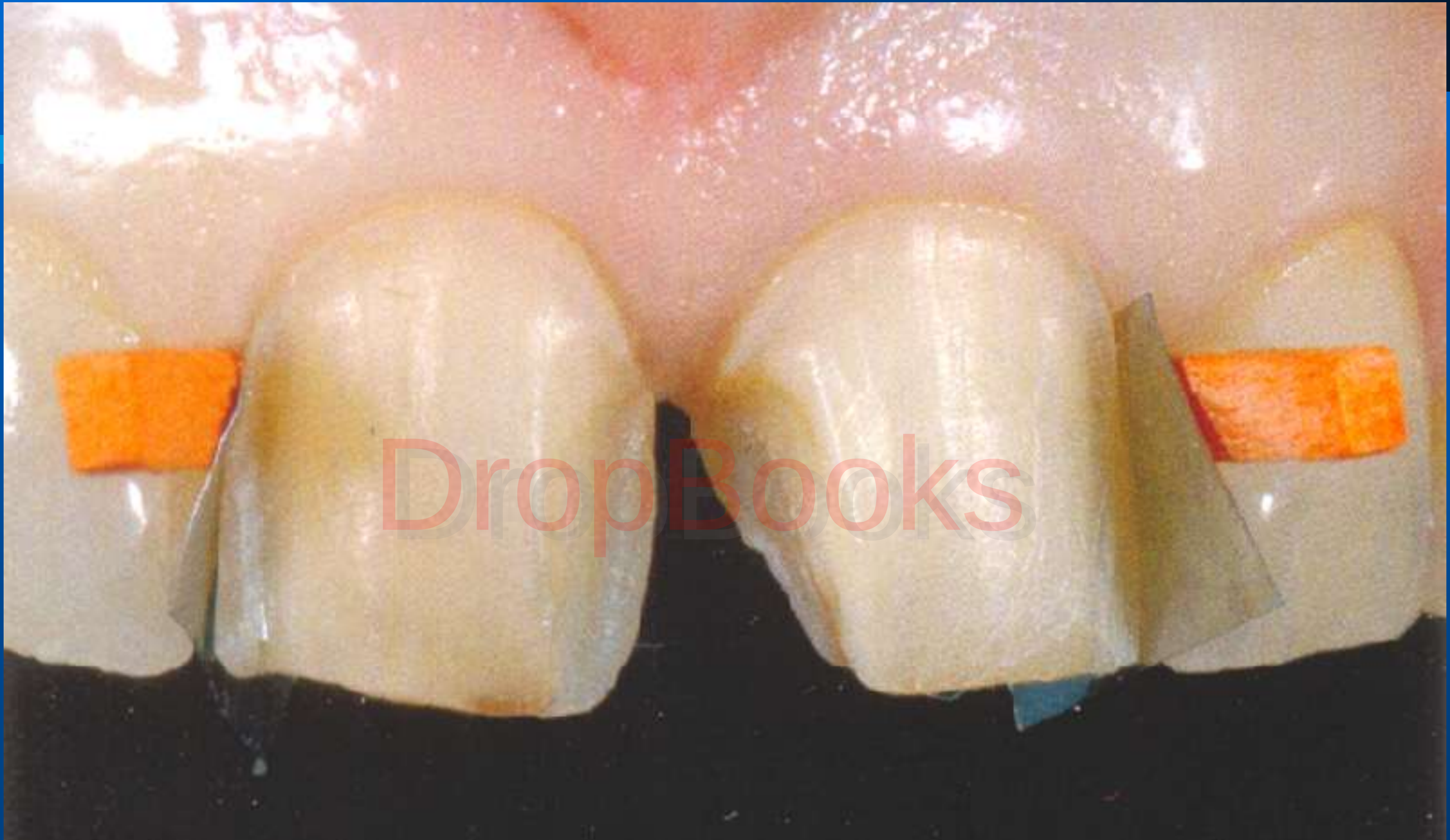
Hydrofluoric acid gel applied to the internal surface of the laminate

Silanization of the laminate veneer

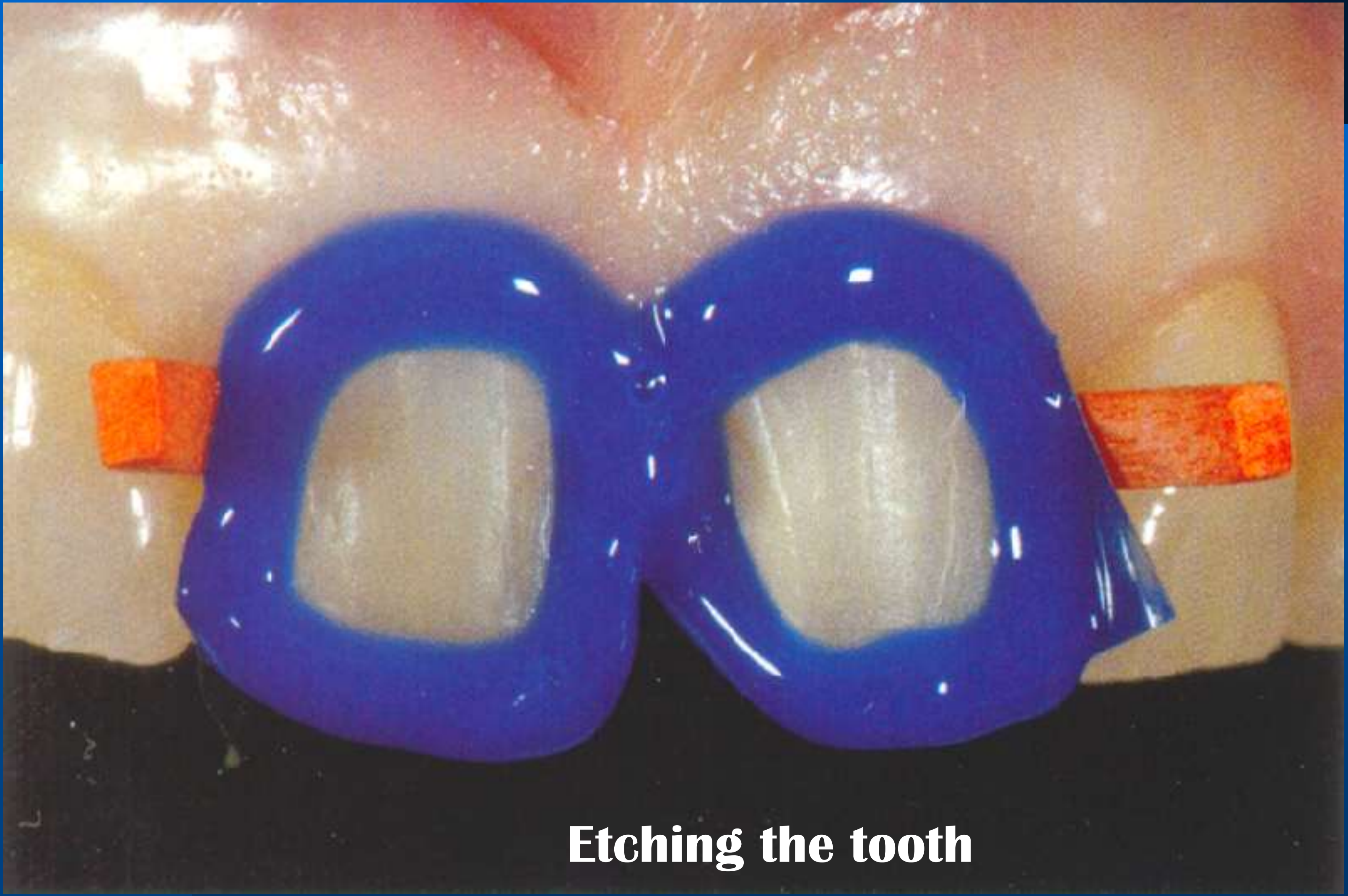
- A fine layer of silane coupling agent is painted over the internal surface of the veneer : left for **2 minutes** then dried.
- It creates a **chemical link** between the **ceramic** and **bonding composite** .
- The surface cleaning , etching and silanization **can be completed in the laboratory.**

Etching of tooth

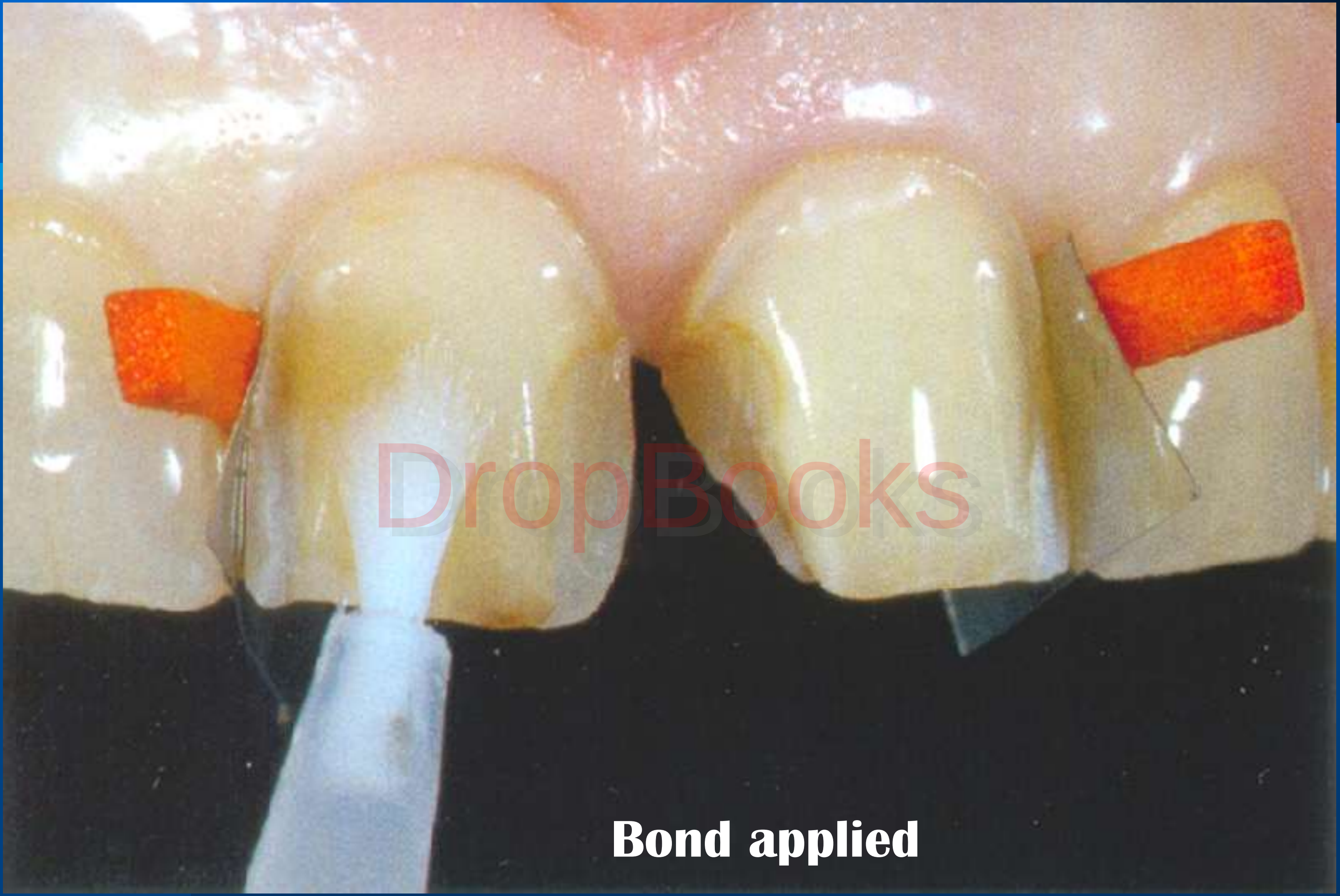
- **37%** phosphoric acid: for enamel areas (**30** seconds) and for dentin areas (**15** seconds)
- Followed by rinsing and drying.
- It creates micromechanical retention.
- **New generation dental adhesives** adhere to the **enamel** and **dentine** simultaneously. All products should be applied to a slightly moist surface. Drying without actually drying out is required.



Matrix band with a wedge are applied to prevent affecting the adjacent teeth



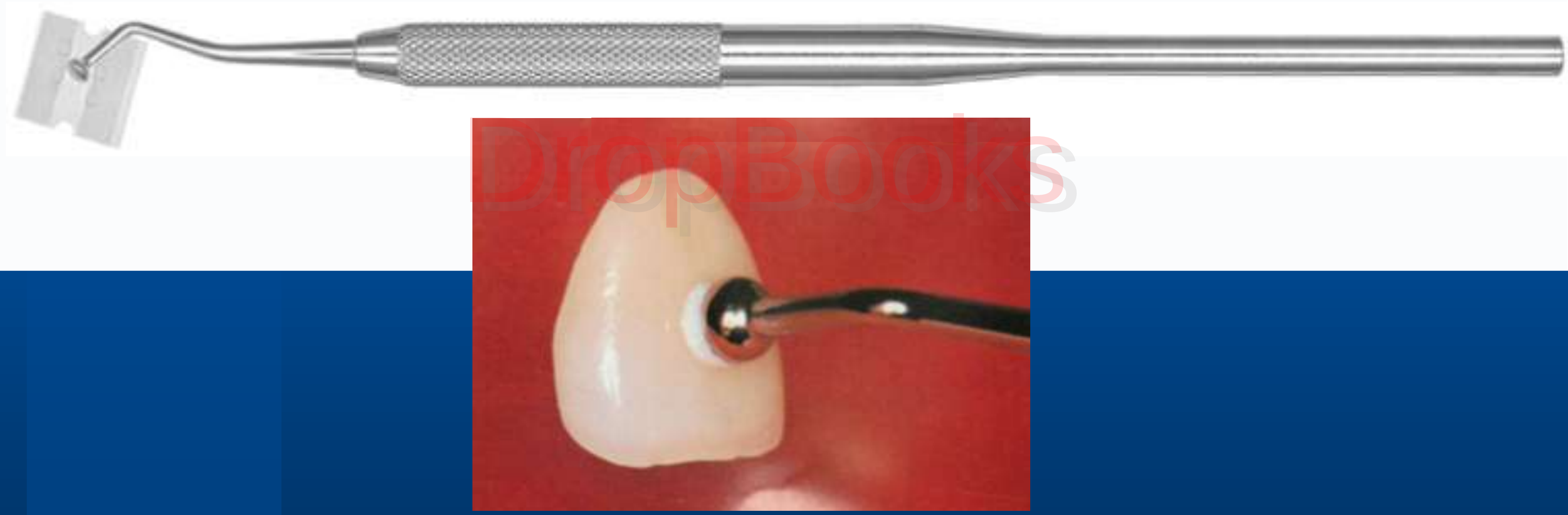
Etching the tooth



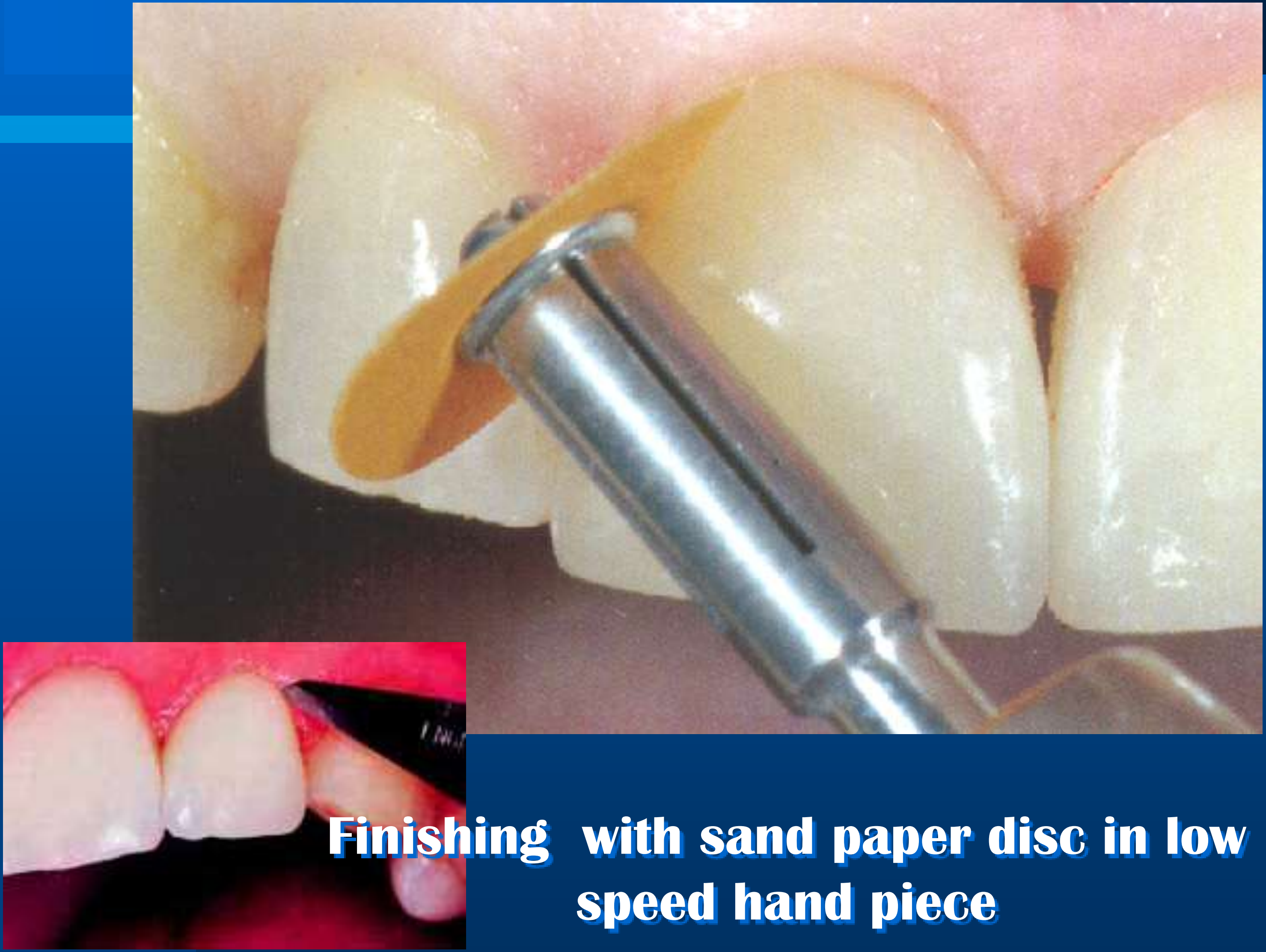
Bond applied

Cementing

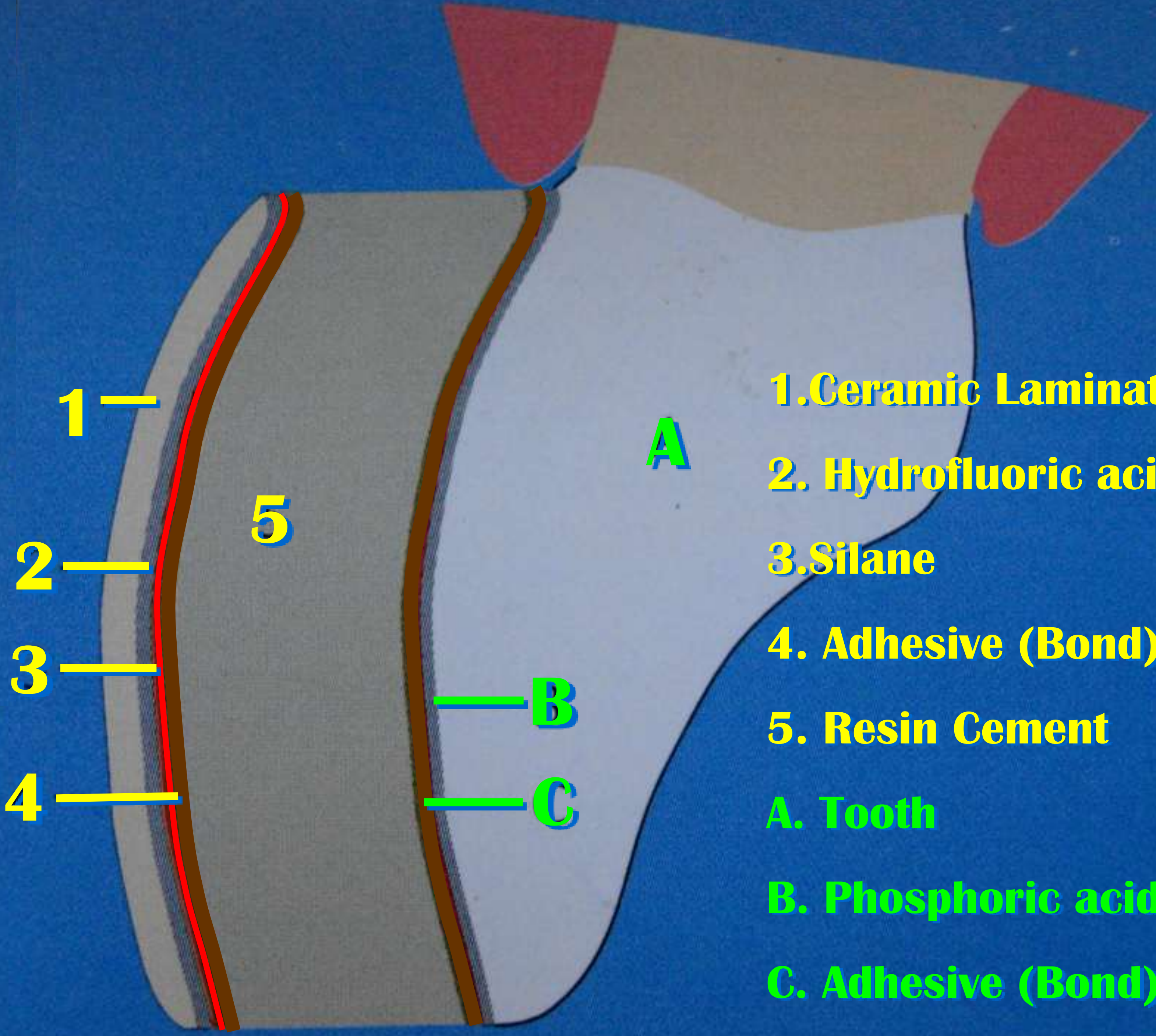
- The laminate veneer is **put into place** accurately exerting a steady moderate pressure. Its held in place by;
  - A special instrument (**Accu-placer**)
  - A wax ball mounted on a plastic handle
  - A **Blu-Tack** ball at the end of a large condenser.
- The strips pulled off in a lingual direction.



Laminate placement instruments



Finishing with sand paper disc in low speed hand piece



1.Ceramic Laminate veneer

2. Hydrofluoric acid etching

3.Silane

4. Adhesive (Bond)

5. Resin Cement

A. Tooth

B. Phosphoric acid etching

C. Adhesive (Bond)

Thank You!